

**Special Master Report For
Latasha Holloway, et. al. vs City of Virginia Beach, et. al.
Case No: 2:18cv69**

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I. Introduction and Overview

A. My name is Bernard Grofman. I am Jack W. Peltason Chair of Democracy Studies and Distinguished Professor of Political Science at the University of California, Irvine. My research deals primarily with issues of representation, including minority voting rights and party competition. I am a Fellow of the American Academy of Arts and Sciences. I have an honorary Ph.D. from the University of Copenhagen for my work on the cross-national study of elections and voting rules. I am the recipient of a lifetime achievement award from the American Political Science Association for my work on elections and voting rights. I am co-author of five books with major university presses (Cambridge (4), Yale (1), and co-editor of 26 other books, (including books with Oxford (3), U. Michigan (4), and Princeton) with over 300 research articles and book chapters. I have served as an expert witness or consultant in redistricting cases in nearly a dozen states over a 40+ year career. Over the past six years I have served as a special master to draw remedial maps for four different federal courts, including redrawing a Virginia congressional district and eleven districts in the Virginia House of Delegates, and districts in local elections in Georgia and Utah. My work has been cited in a dozen different U.S. Supreme Court cases, perhaps most notably in *Thornburg v. Gingles* 478 U.S. 30 (1986).

B. In early August of 2021, I was selected by Judge Raymond A. Jackson to serve as a special master at the remedy phase of the litigation in *Holloway*. I was nominated for that position by both the Plaintiffs and the Defendants. Given the relatively tight deadlines under which the Court needs to operate in order to allow an election to go forward, I began my preliminary analyses the day after I was informed of my selection as special master.

C1. The task assigned to me by Judge Jackson role is to evaluate, from a social science perspective, the three remedial plans presented to the court (one by plaintiffs and two by the City of Virginia Beach) to assist the Court in deciding which, if any, of those plans remedy the voting rights violation found by the Court; and if none were satisfactory, to assist the Court in preparing a narrowly tailored plan that did fully remedy the voting rights violation found by the Court based on 2020 population data and drawn in compliance with standard “one person, one vote” guidelines.

C2. A critical aspect of that task involves the review, from a social science perspective, of the conditions needed to create *minority opportunity districts*. By a *minority opportunity district* I mean one that, realistically, provides an equal opportunity for the minority group to participate in the political process and to elect candidates of choice. Note that I do not take a *minority opportunity district* to be one that provides a “safe seat” for minority candidates of choice. Rather, as I define it, a *minority opportunity district* is one where, in the light of the district’s demographic composition and evidence of the past voting behavior of minority and White/Anglo voters, there are realistic prospects for the minority to be able to elect a minority candidate of choice, even when that minority candidate of choice is one who herself or himself comes from the minority community

D. I take as given by the Court’s opinion that the relevant voting rights pertain to the combined minority community of three groups given special recognition under Section 2 of the Voting Rights Act because of each’s history of having been the victim of discrimination: African-Americans, those of Spanish heritage (commonly referred to as Hispanics), and Asian-Americans.

E. As part of the Court Order, I was given authority to hire a research assistant. I have hired Zachary Griggy, an undergraduate political science major at the University of California, Irvine to serve in this capacity. Mr. Griggy is experienced with Geographic Information Systems (GIS), having previously used both ArcGIS software (made available to UCI students through the university’s IT department) and Dave’s Redistricting App (DRA), a free user-friendly mapping program that is becoming widely used in redistricting map-drawing. In two instances, acting solely as a concerned citizen, Mr. Griggy has drawn nonpartisan redistricting plans that he presented to local jurisdictions in California that subsequently were enacted by the jurisdiction into law. I have attached his resume to this report as Appendix C.

F. In reaching conclusions for my evaluations of these three proposed remedial plans:

F1. I reviewed all the materials provided me by the Court in hard copy format. These included the Court Opinion of March 31, 2021, with its finding of a statutory violation, recent briefs filed by Plaintiffs and by the Defendants in the remedy phase of the case, expert witness reports filed

by both sides in the remedy phase of the case (including those by Kimball Brace, Lisa Handley and Quentin Kidd, for the Defendants; and Anthony Fairfax, Allan Lichtman, and Douglas Spencer for the Plaintiffs), and some earlier expert witness reports dealing with illustrative maps and with evaluation of racial bloc voting.

F2. I reviewed basic demographic facts about the City of Virginia Beach provided in these documents, as well as the population and demographic information about the districts in the three proposed maps.

F3. I examined how demographic patterns in the city were linked to geography using Dave's Redistricting App, which includes estimates of population, voting age population (VAP), and citizen voting age population (CVAP) taken from the Census's American Community Survey (ACS). I updated my understanding of the demographic data and updated some of my analyses once 2020 Census data for the City became available in useable form on Dave's Redistricting App. This data became available on August 19, 2021. Initially I worked with that 2020 data. However, an adjusted data set became available for the State of Virginia on September 21, 2021, and it is the Census population numbers that incorporate these adjustments of which I now make use.¹

F4. Acting pursuant to my specific instructions, and making use of materials provided in electronic or spreadsheet form by the parties, my research assistant, Mr. Griggy entered information about the two remedial plans proposed by Defendants, the remedial plan proposed by Plaintiffs, and about the enacted (now invalidated) map, so that I could review these plans on-line and not just in hard copy.

F5. In complying with the Court's order, I have done independent reanalyses of information provided by experts for Plaintiffs or Defendants in the form of documents provided to the court or requested by me in electronic form. In addition to the data provided me by the Court, I have also examined publicly accessible census data from the 2020 Census and publicly accessible data on raw vote tallies in City elections found on the City of Virginia Beach web site.² I have examined factors that are important in assessing *minority opportunity to elect*, including the extent of racial bloc voting in the City of Virginia Beach, levels of minority and non-minority political cohesion in elections, and the frequency of minority electoral loss. In this Report, I focus on my own empirical conclusions on these topics for elections in the years 2010-2018.³

¹ For the City of Virginia Beach the differences between the adjusted and non-adjusted population data are minuscule, with estimates generally identical to two or more significant digits.

² Election data drawn directly from the City's website allowed me to better understand how data on voting in "vote for two" at-large elections was being presented by experts in the case. In Appendix A to this Report I discuss an alternative way to present election results from the "vote for two" contests identified in Table 2 below that can also be informative, especially in the context of the legal issues in this case.

³ Additional information about data sources and methodology in work by other experts that I cite can be found in the original cited source.

The Court Opinion of March 31, 2021 provides an assessment of previous expert witness testimony in the case.

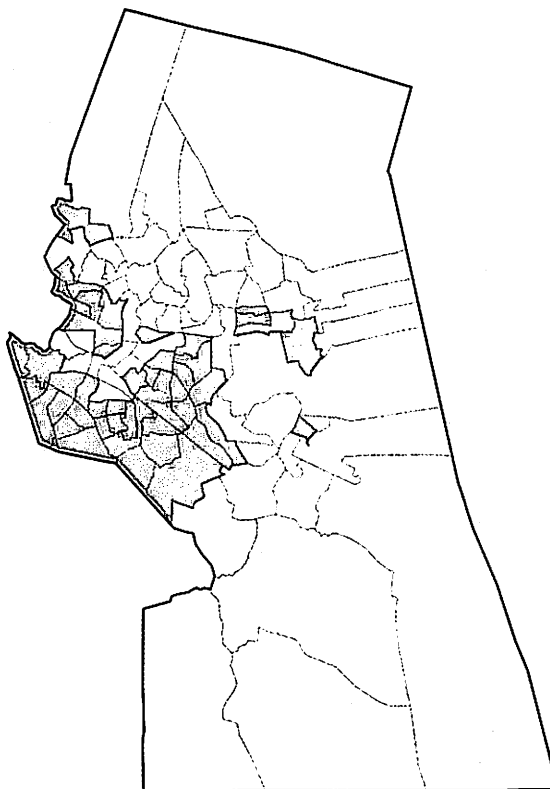
G. Census data from 2020 allowed me to consider the extent to which plans submitted to the Court drawn on the basis of earlier census data might need to be modified in the light of “one person, one vote” concern.

H. The most important summary conclusions in my Report are highlighted in bold.

I. Below are a set of demographic and election facts that provide the framework for my evaluations.

11. The minority population in the City of Virginia Beach is geographically concentrated on the western edge of the city. The areas of the City that are nearer the ocean are disproportionately non-minority. This geographic pattern of minority concentration is illustrated in Figure 1. It shows two color-codings of voting tabulation districts (VTD), also known as precincts, with the shaded VTDs having an above mean minority CVAP population and the unshaded VTDs having a below median minority CVAP population.

Figure 1. Map of VTDs in the City of Virginia Beach with Shaded VTDs with above median minority CVAP and unshaded VTDs with below median minority CVAP.



I2. In the areas of higher than median minority population, at the VTD level, there is a mix of African-Americans, Hispanics, and Asian-Americans, with no one minority group a population majority except in two VTDs where African-Americans are a CVAP majority. At the VTD level, and looking at CVAP, the minority communities tend to be intermingled, with a positive correlation between any pair of minorities, but with black CVAP, Hispanic CVAP, and Asian-American CVAP, taken individually, each negatively correlated with White CVAP.

Table 1. CVAP Correlations in the Locations of Different Groups at the VTD Level

<i>CVAP</i>	<i>White share</i>	<i>Hisp share</i>	<i>Black share</i>	<i>AA share</i>
white share	1			
Hisp share	-0.66	1		
Black share	-0.94	0.51	1	
AA share	-0.63	0.31	0.40	1

I3. Based on the most recent (corrected as of September 21, 2021) 2020 Census population estimates reported in Dave's Redistricting App, the combined Black plus Hispanic plus Asian-American group is 40.5%. Based on the ACS estimates reported in Dave's Redistricting App, in the City of Virginia Beach, the share of CVAP of the combined Black plus Hispanic plus Asian-American group is 32.8%. As reported in Dave's Redistricting App, 2020 voting age population data shows the minority proportion of the voting age population in Virginia Beach to be 37.2%.

J1. Ten-district maps for the City Council that draw geographically compact districts can "naturally" create reasonably compact contiguous districts with high minority population even with no attention to race simply because of the pattern of geographic concentrations of minorities in the City.

J2. The map presented as a remedy map by Plaintiffs demonstrates that it is possible to draw three contiguous and geographically compact districts in a ten-district plan such that each of the three contains a combined minority CVAP in excess of 50%. Indeed, the minority population in Virginia Beach is sufficiently concentrated that drawing three 50%+ minority CVAP districts in the area of heaviest minority population can readily be done. Thus, the stricture of *Bartlett v. Strickland*, 556 U.S. 1 (2009) that CVAP is the most appropriate metric in considering Section 2 Voting Rights Act claims is satisfied, and the Plaintiffs' map demonstrates the initial basis of a claim under *Bartlett* that the City of Virginia Beach should draw three *minority opportunity districts* as part of any ten-district plan.⁴

⁴ The other elements needed to substantiate a Section 2 claim were addressed by Judge Jackson in his Opinion of March 31, 2021.

J3 Within the set of VTDs shown in Figure 1, there are three sets of VTDs and census blocks that have especially high minority populations. These were used as the cores of the three minority 50%+ CVAP districts in the Plaintiffs' map.

K. The expert witness reports in this case ended with analysis of election in 2018, and I have only reported data on elections through 2018 in this Report. In my Report, I focus on the most recent elections considered by experts in the case, those from 2010-2018.

K1. Over the period, 2010-2018 (including the 2011 special election) there were ten different minority candidates who contested city council elections. Three ran more than once (three times for Mr. Furman, twice for Ms. Ross-Hammond, and twice for Mr. Cabiness).⁵

K2. Over the period, 2010-2018 (including the 2011 special election), three different minority candidates of choice won city council elections

L1. The only Virginia Beach City Council elections over the period 2010-2018 in which there are two minority candidates are the "elect two" election in 2018 and the "elect two" election in 2010 and the 2018 contest with Ms. Sabrina Wooten and Mr. Eric Wray (See Dr. Douglas M. Spencer "Expert Report: Racially Polarized Voting in Virginia Beach, P-0077, July 15, 2019).

L2. In contests where there are one or more minority candidates, the average total number of candidates is much higher in the at-large elections where voters can select two candidates than in at-large elections where voters can select only one candidate (see Table 2 later in the Report).

M1. In examining proposed remedial maps, I take notice of the fact that an incumbent, Ms. Jessica Abbott, has now retired from office for health reasons and that she has been replaced in 2021 by the appointment of Mr. Rocky Holcomb. Along with those of six other incumbents, Mr. Holcomb's term is presently set to expire in 2022, with a special election to fill the balance of Ms. Abbott's term in office, which would have ended in 2024. Under the staggered election rules presently in place in the City of Virginia Beach for its City Council elections, in addition to an election in 2024 when the tenure of the winner of the 2022 special election to fill out the remainder of Ms. Abbott's term will have required, there would be three other City Council elections in 2024.

M2. I also take notice of the fact Mr. Wood, a White incumbent, has resigned, thus creating an open seat (as of the date of this writing, September 19, 2021)

N. The map I provide later below, which illustrates one way to fully deal with voting rights issues in the City of Virginia Beach while simultaneously avoiding gratuitous pairings of incumbents and the placement of White incumbents in heavily minority districts, uses 2020

⁵ This count would be eleven if we included Mr. Wray, who lost an election to Ms. Wooten in 2018. His minuscule support among minority voters, estimated by Dr. Spencer to be 8.5%, led me to characterize him as not a viable candidate from the perspective of minority voters, and I did not include his votes in Table 2.

population adjusted Census data. That illustrative 10-district map satisfies one person, one vote, maintains the three 50%+ CVAP districts found in the Plaintiffs' map, and eliminates all incumbent pairings found in either or both Defendants' and Plaintiffs' Map. It also places the two minority incumbents in heavily minority districts with no White incumbent in place, and places no White incumbent's residence in a majority-minority district.

II. Review of Methodology for Doing Racial Polarized Voting Analyses

A1. There are multiple ways to do *racially polarized voting* analyses (RPV, a.k.a. *racial bloc voting* analyses, RBV).

A2. The simplest methodology for RPV analysis is to identify racially/ethnically homogeneous VTDs (precincts) where we have both voting behavior and demographic attributes identified either from matching census blocks to VTD boundaries or in some other fashion (e.g., from racial data on voter registration in the few states where such data is available, or from surname matching date based on voter rolls). This method is generally referred to as *homogeneous precinct analysis*. When we can find precincts with very high levels of minority population, with the usual standard being blocks or VTDs with at least 90 percent of their population or voting age population or citizen voting age population coming from the given group/grouping, then voting outcomes in such racially/ethnically homogenous precincts can be taken as a lower bound on the degree of non-minority support for minority candidates, because the vote in the precinct is a *weighted average* of the votes of the minority voters and the votes of the non-minority voters, and even in a nearly perfectly homogenous minority precinct some of the votes in the precinct in the precinct will come from White voters whose support for the minority candidate is likely to be lower than the support for the minority candidate coming from minority voters. In doing homogenous precinct analysis it is preferable to report results using a measure such as voting age population (or citizen voting age population) that is close to reflecting the size of the actual voting electorate. However, there may also be differences in turnout as a share of CVAP between the minority and non-minority communities such that the minority CVAP percentage overstates the share of minority voters in the actual electorate. Thus, homogeneous precinct analysis normally provides a lower bound on the extent of racially polarized voting and political cohesion in the minority community. On the other hand, If we are looking at homogenous White precincts, the homogeneous precinct estimate of White support for the minority candidate is an upper bound because some of the support for the minority candidate is likely to be coming from the relatively few minority voters in the otherwise overwhelmingly White VTD, and these are likely to be giving more support to the minority candidate than the White voters in the precinct. Nonetheless, the more racially/ethnically homogeneous the precinct, the closer the result in the precinct comes to telling us exactly how members of the dominant group in that precinct voted.

A3. In the earliest cases involving allegations of vote dilution, the most common way for experts to do RPV analyses using aggregate election data matched to census data on demography of the VTDs (or census blocks) was to use the *Goodman (single equation) method of ecological*

regression.⁶ Several scholars (the historian, Morgan Kousser, the sociologist, James Loewen, and myself, a political scientist) independently derived an extension of that method to also take into account different levels of minority and non-minority turnout. This double equation ecological regression⁷ was the methodology I used in my testimony in *Gingles v Edmisten* 590 F.Supp. 345, subsequently heard as *Thornburg v Gingles* 478 U.S. 30 (1986), and it was accepted as reliable by both the trial court and the U.S. Supreme Court.

A4. Today, virtually all experts who present data on RPV patterns complement ecological regression with *ecological inference* methods of the kind introduced by the Harvard political scientist, Gary King, and made user-friendly by free software available through Dr. King's website.⁸ Subsequent to my testimony in *Gingles*, I have written a short non-technical introduction to King's approach to ecological inference for the Brennan Center associated with NYU Law School, and I wrote a co-authored article and a co-authored book chapter about this method, including comparison of its results to those of other methods for doing RPV analysis. I generally view *ecological inference* tools as superior to standard *ecological regression* tools. Their chief advantage over traditional ecological regression is that they guarantees that projected shares of the minority vote going to minority candidates will neither be negative estimates nor estimates above 100%. However, *ecological regression* methodology is still used by experts since (a) it allows for the presentation of graphs that visually show how support for minority candidates varies with the level of minority population in the precinct, and (b) it tends to produce results that are, for all practical purposes, identical with those produced by more complex methods, but can be explained far more simply.

A5. Another method of RPV analysis is known as the *method of projection*, or as the *method of reconstituted elections*. The latter term is the label used by Dr. Spencer in his expert witness reports for his work using this method in Virginia Beach. The *method of projection* is very straightforward. It involves projecting the results of relevant past elections in a larger political unit into the new districts. Normally such projections involve recent bi-racial/bi-ethnic contests with one or more viable minority candidates. Best practices require that, where possible, they be in elections of a type comparable to the elections. In the City of Virginia Beach, these would primarily be projections of results in one or more of the previous at-large elections to the city council, since these involve elections to the same political body, and with the some of the same candidates as are likely to contest single seat contests in a court-sanctioned or court-ordered

⁶ Goodman, Leo. 1953. "Ecological Regression and the Behavior of Individuals." American Sociological Review, 18(6): 663–664; Goodman, Leo. 1959. "Some Alternatives to Ecological Correlation." American Journal of Sociology, 64: 610–625.

⁷ See Grofman, Bernard N., Michael Migalski, and Nicholas Noviello. 1985. "The 'totality of circumstances' test in Section 2 of the 1982 extension of the Voting Rights Act: A social science perspective." Law and Policy, 7(2):209-223.

⁸ King, Gary. 1997. A Solution to the Ecological Inference Problem. Princeton, NJ: Princeton University Press.

remedial map. The method of projection may also be used with exogenous elections which are of comparable type to the city council elections but which take place in a geographic unit in which the proposed district is wholly embedded. Exogenous elections must be selected with care if we use them for probative purposes.

A6. Relative to eligible voters, minority turnout may be lower than non-minority turnout, and thus the eligible voter population may be less heavily minority than the actual electorate. As noted above, ecological inference techniques have been developed to generate estimates that take this fact into account. The *method of projection* also takes differential minority turnout into account since it is based on data from actual elections and thus reflects actual turnout. That property is one of its strengths. In order to consider the realistic opportunity to elect potential in hypothetical districts whose configurations are quite different from current districts it can be highly informative to examine outcomes in recompiled (city-wide) elections with votes for both minority and non-minority candidates projected into proposed districts.⁹

A7. The level of support given to the minority candidate of choice in a past election by White/Anglo voters and/or by minority voters may vary across different parts of a jurisdiction, which can affect the viability of that candidate in districts drawn in the different parts of the City. The method of projection takes into account the past vote choices of the voters (both minority and non-minority) who are actually resident within the new district boundaries. In this way, it can yield estimates of expected outcomes in new districts that are more accurate than results from ecological inference techniques used to estimate minority and non-minority voting choices in a jurisdiction as a whole, or in past districts with different boundaries than the new district. That property of automatically adjusting results to changed district configurations is another one of the projection methods strengths.

A8. Nonetheless, care must be taken interpreting projections into new single seat districts of past at-large election results. At-large elections make it harder for minority candidates to win, since minority candidates generally have access to fewer resources than their White opponents and must spread these resources over a much larger geographic area in an at-large contest, and those resources also need to be stretched over a much larger electorate in an at-large election as compared to a district election. Moreover, in an at-large election, minority candidates may be faced with slates of White candidates who share resources (See March 31, 2021 Court Opinion at pp. 103-104). On the other side of the coin, district elections allow for minority candidates to make use of tools for neighborhood campaigning (door to door, yard signs) which can partly compensate for limited resources. Thus, I expect that, in general, a minority candidate running in a single seat district election can be expected to perform as well or better than that same minority candidate performed in an at-large single seat election in that same geographic area.

⁹ There are special problems, in projecting results from multi-seat at-large contests into single-seat district-level contests, especially when the multi-seat election has more than one minority candidate. I discuss these in Appendix A to this Report. These complexities in interpreting projection results from two-seat elections into single-seat elections have led me not to employ the projection method using data from past elections in two-seat at-large districts involving multiple minority candidates. Nonetheless, clear inferences may be drawn about racially polarized voting patterns within these two-seat elections (see below).

B1. The *method of projection* was relied upon by me in my Special Master Report in *Personhuballah v. Alcorn*¹⁰ and in my Special Master Report in *Bethune-Hill*.¹¹

B2. The reliability of my conclusions based in large part on the *method of projection* was accepted by both the *Personhuballah v. Alcorn* court¹² and the *Bethune-Hill* court.¹³

B3. In post-election analyses of the elections held under the court-ordered redrawn districts in *Personhuballah v. Alcorn* and in *Bethune-Hill*, my assessments derived from the projection method as to which new districts would be *minority opportunity districts* were perfectly borne out by the subsequent elections after the imposition of a court-ordered map (in 2016, 2018 and 2020 for the redrawn congressional map in Virginia CD3 and CD4; and in 2019 for the redrawn Virginia House of Delegates map in the twelve most heavily minority districts). Of course, my projections reflected probabilistic assessments, not certainties.

II. Racially polarized voting in the City of Virginia Beach, 2010-2018

A. Table 2 below, with estimates taken from Douglas M. Spencer, “Expert Report: Racially Polarized Voting in Virginia Beach,” July 15, 2019, summarizes the data on elections in 2001-2018 with viable minority candidates. The three minority candidates of choice shown in bold were elected to office. The estimates reported are those derived from Ecological Inference (EI). All the candidates shown in this table are members of the minority community.¹⁴ The data

¹⁰ Bernard Grofman, “Report of the Special Master in *Personhuballah v. Alcorn*.” Civil Action No 3: 13cv678 E.D. Virginia (Report filed November 16, 2015 – dated November 15, 2016)

¹¹ Bernard Grofman, “Report of the Special Master in *Golden Bethune-Hill v. Virginia State Board of Elections*” Civil Action No 3: 14cv852 E.D. Virginia (Report filed December 7, 2018)

¹² “After a thorough evaluation of Dr. Grofman’s qualifications, report, and testimony, we find that Dr. Grofman was a credible witness and that he used an appropriate methodology” *Golden Bethune-Hill v. Virginia State Board of Elections*” Civil Action No 3: 14cv852 E.D. Virginia (filed February 14, 2019), slip op at p. 14.

¹³ In its Opinion, the *Personhuballah* trial court, *Personhuballah v. Alcorn*.” Civil Action No 3: 13cv678 E.D. Virginia (filed January 7, 2016) relied on my calculations as to the likely effects of the redrawn districts on minority opportunity to elect candidates of choice (see slip op. at p. 7). On February 10, 2016, I received a kind note from Judge Robert Payne on behalf of the three judge Court extending appreciation for my “fine service in this case. Your careful and thorough work was a great help for which the Court is grateful. With appreciation and respect, sincerely yours, Robert E Payne.”

¹⁴ Even within the set of contests in which there is a viable minority candidate, non-minority members can be the minority community’s candidates of choice. Nonetheless, in seeking to

reported in this table is about the estimated voting behavior of the minority community and the White community. Here the minority community consists of the grouping that is not White. It consists almost entirely of African-Americans plus Hispanic plus Asian-Americans, with a

compile the most relevant evidence of how difficult it will be to create *minority opportunity districts* I limit myself in Table 2 to contests involving minority candidates, since an equal opportunity to elect candidates of choice would not be meaningful if the only candidates of choice of the minority community who could be elected were non-minority candidates. Because the minority community is, on average, less wealthy and less well-educated than the non-minority community, and because at-large elections do not allow minority candidates the potential for success in a district-based election within a limited geography where door to door campaigning, street signs, and mailers to a limited set of mailboxes, and friends and neighbors word of mouth could at least partially compensate for discrepancies in resources between minority and non-minority candidates, I am also cautious about treating non-minority winners of at-large elections as ones who would be a minority candidate of choice in a district-based election within a heavily minority district. Thus, I am highly reluctant to project the results for such candidates in seeking to assess *minority opportunity to elect* within possible new remedial districts. Moreover, within the set of contests in which there is a minority candidate, I will focus on those contests in which there is a minority member who is himself or herself a minority candidate of choice, since data about such candidates will be more reliable in projecting possible outcomes in potential remedial districts than data about minority candidates in general. Thus, I do not include in this table the non-minority winner in the contest in the single seat two candidate contest in 2014 which Mr. Burton lost, nor the non-minority winner in the single seat contest in 2010 which Mr. Furman lost, nor the non-minority winner in the contest in the two-seat contest in 2018 which Mr. Bright lost., nor the non-minority winner in the two-seat at-large election of 2018 which Mr. Cabiness lost. I also do not include data on the Mayor's contest in 2016 since the minority candidate in that contest, Mr. Furman, was not the minority candidate of choice and his vote total, only in single digits, suggested that he was not a viable candidate in that election. Similarly I have excluded the candidacy of Mr. Furman in the 2014 at-large election, since he was not a minority candidate of choice in the election and his vote total, only in single digits, suggested that he was not a viable candidate in that election.

minuscule proportion of “other” minorities.¹⁵ The numbers shown in the table are given as proportion of total votes cast.¹⁶

¹⁵ I have several reasons for limiting myself in Table 2 to voting estimates for the minority community consisting essentially of African-Americans plus Hispanic plus Asian-Americans treated as a whole. First and foremost this is the voting rights group which brought this lawsuit. Second, it is the voting group whose voting behavior Judge Jackson asked me to examine in the context of determining an appropriate remedy for the voting rights violation found in the previous City Council map. Third, it is the only voting rights community with a large enough and geographically concentrated enough minority population to meet the 50% CVAP test of *Bartlett v. Strickland* 556 U.S. 1 (2009) for when a Section 2 claim can be brought. Fourth, and perhaps most importantly from a social science rather than a legal perspective, given the demographic and geographic case facts in the City of Virginia Beach I simply do not believe that is statistically possible to determine the voting behavior of African-American, Asian-American, and Hispanic populations individually (see Appendix B). Thus I have placed no reliance on conclusions by experts for Defendants or experts for Plaintiffs about differences in voting behavior between the three groups or between any single group and the combined group.

¹⁶ Appendix A addresses the complication of interpreting Table 2 results for “vote for two” elections where there are more ballots cast than there are voters. There is one further caveat that must be noted. The data in this table are drawn from ecological inference of the votes cast at the precinct level. In the City of Virginia Beach votes that are submitted by mail are tallied at a central counting location, and the same appears to be true for provisional ballots. As I understand Dr. Spencer’s analyses, these non-precinct votes are not included in the estimates based on ecological inference or ecological regression. My own cursory inspection of the election returns in the city suggests that the in-person ballots are, on average, at least marginally less favorable to minority candidates than mail ballots. If correct, this would suggest that the tallies shown in Table 2, when projected into new single seat remedial districts, would at least slightly understate the expected vote share of the minority candidate. But the differences should be minimal.

Table 2.

Minority Candidates: Data Identifying Minority Candidate of Choice and Showing Estimated Level of Polarized Voting Patterns in City of Virginia Beach City Council Elections, 2010-2018

year	Minority candidate	Number to be elected	Minority candidate of choice	White candidate of choice	Minority candidate rank among Minority Voters (and vote share of total votes cast)	Minority candidate rank among Non-Minority Voters (and vote share of total votes cast)	Overall Election Rank of Minority candidate (and vote share of total votes cast)	Number of candidates
		SINGLE-SEAT						
2018	Wooten ¹⁷	1	YES	YES	1 (85.5%)	1 (51.1%)	1 (62.1%)	3
2016	Ross-Hammond	1	YES	NO	1 (59.9%)	2 (30.3%)	2 (40.6%)	2
2014	Cabiness	1	YES	NO	1 (37.0%)	4 (6.4%)	4 (16.8%)	4
2014	Burton	1	NO	NO	2 (34.3%)	2 (18.9%)	2 (23.3%)	2
2012	Ross - Hammond	1	YES	NO	1 (65.7 %)	4 (17.0%)	1 (32.2%)	4
2011	Sherrod	1	YES	NO	1 (64.8%)	3 (11.5%)	3 (25.9%)	3
2010	Furman	1	NO	NO	2 (43.7%)	2 (32.8%)	2 (35.3%)	2
2010	Bullock	1	YES	NO	1 (79.9%)	2 (32.9%)	2 (45.6%)	2
		TWO-SEAT						
2018	Rouse	2	YES	NO	1 (31.8%)	3 (24.4%)	1 (26.7%)	6
2018	Bright	2	NO	NO	3 (16.5%)	6 (5.7%)	5 (8.8%)	6
2010	Jackson	2	YES	NO	1 (58.2%)	6 (7.5%)	6 (20.3%)	7
2010	Cabiness	2	NO	NO	3 (26.7%)	7 (4.5%)	7 (11.3%)	7

¹⁷ In this contest, Ms. Wooten is the overwhelming candidate of choice of the minority community. There is another minority candidate in the contest, Mr. Eric Wray. However, his support of minority voters is minuscule (estimated at 8.5%). Accordingly, I do not treat him as a viable candidate from the perspective of minority voters. However, his support among White voters is estimated at 43.3%. (See Douglas M. Spencer, "Expert Report: Racially Polarized Voting in Virginia Beach," July 15, 2019, at p. 12).

B. Of the eight elections shown in Table 2 where there is a minority candidate of choice, voting is polarized along racial lines in seven of the eight, i.e. the minority candidate of choice is not a candidate of choice of the non-minority community. And in the one single seat contest which not polarized along racial lines, the election of Ms. Wooten in 2018, there are still dramatic differences between her estimated support among minority voters (85.5%) and her bare majority (51.1%) support among White voters.¹⁸ Thus, I conclude that voting in City Council elections between 2010 and 2018 is clearly polarized minority and the non-minority community in terms of willingness to vote for the minority candidate of choice. (See Table 2)

C1(a). In the City of Virginia Beach, even the VTDs with the highest minority proportions do not have sufficiently large minority populations to allow us to use the results in those precincts as reliable indicators of how the minority community (and only the minority community) in those precincts voted. Thus, we cannot directly make use of the method of *homogeneous precincts* in the City of Virginia Beach to assess the voting behavior of the separate minority communities. There are no such sufficiently racially/ethnically homogenous precincts in Virginia Beach in terms of the minority community, and this is true whether we focus on African-Americans, Hispanics, or Asian-Americans, or even when we look at the three groups combined. The largest concentration of African-Americans at the VTD level is 59%; the largest concentration of Hispanics at the VTD level is 33%; the largest concentration of Asian-Americans at the VTD level is 20% and even the largest concentration of the combined group at the VTD level is only 72%.

C1(b). While the oldest method of RPV analysis, the use of *homogeneous precincts*, is not directly applicable in Virginia Beach for the minority group (see above), it is available for use to study the voting behavior of non-minority voters. In the City of Virginia Beach, there are some VTDs with high enough non-minority population to qualify as homogenous precincts for the white/Anglo group in the City. There are 11 VTDS with above 90% or above White CVAP, two of which have a 95% or above White CVAP.

C1(c). Moreover, while the limited minority share(s) of even the most heavily minority VTDs does not allow us to draw reliable inference about the separate voting behavior of individual minority groups in those VTDs, because there are eleven VTDs which are overwhelmingly White (90%+, with two above 95%), a simple comparison of the voting behavior in the overwhelmingly White districts and the voting behavior in the most heavily minority districts can be conducted. If the overwhelmingly White VTDs give almost no support to minority candidates, while the heavily minority VTDs give substantial support to minority candidates this is probative of a pattern of racially polarized voting. Support for a finding of racially polarized voting would be further increased if, as the proportion of minority population in the VTD increases, the level of support for the minority candidate also increased. Dr. Spencer, "Expert Report: Racially Polarized Voting in Virginia Beach , July 15, 2019" (Exhibit P-0077) has done analyses of exactly this sort and finds the pattern to be such that, in general, the more heavily

¹⁸ Also, in this contest, the only candidates are minority candidates so White support must go to a minority candidate.

minority VTDs give considerably greater support to minority candidates, with the overwhelmingly white precincts generally quite low on support for the minority candidate(s). Thus, despite the absence of homogeneous minority precincts, the existence of homogeneous non-minority precincts, and a general pattern of higher support for the minority candidate the higher the minority population, allows inferences about racially polarized voting patterns vis-a-vis the minority group as a whole, both by visual inspection of scatterplots showing support for minority candidates versus proportion minority in the district and by making use of ecological regression and ecological inference tools of analysis.

C1(d) However, care must be taken in making inferences from plots of support for the minority candidate(s) versus share of the minority in the precinct. First, since even the most heavily minority VTDs are not overwhelmingly minority, the observed votes for minority candidates in even the most heavily minority VTDs in such plots understates the actual level of support of minority voters for minority candidates in those VTDs if we assume that minority voters are, on average, giving more support to minority candidates than White voters are giving to minority candidates. But we have clear evidence about White voting from the homogeneous White districts and, indeed, these precincts give very low support to minority candidates. Second, Dr. Handley, "Affidavit of Lisa R. Handley" July 1, 2021, at pp. 2-3, has called attention to likely turnout differences between the minority and Whites in the City of Virginia Beach, even among the citizen voting age population in each group -- with turnout relative to eligible population likely to be lower among minority voters. When minority turnout is lower than White turnout, the support level of minorities for minority candidates in even the most heavily minority VTDs will be further understated in such plots because the minority proportion of the actual electorate in the VTD will be lower than the minority portion of the eligible to vote population in that VTD. In other words, even the most heavily minority VTDs in Virginia Beach are not overwhelmingly minority in eligible population and will be even less so when we consider actual voters.

D. In situations where there are multiple minority candidates, in both a "vote for one" election and a "vote for two" election it is informative for analysis of racially polarized voting to consider the estimated combined share of the votes given to the set of minority candidates by the minority community, as compared to the estimated combined share of the votes given to the set of minority candidates by the non-minority community; and it is also informative to compare the ranking among all candidates given by the minority and non-minority communities to each member of this set of minority candidates (as determined by relative vote shares for each candidate from each group). However, in situations where there is more than one candidate of a given race in the contest, even in "vote for two" situations, it is common for both minority voters and non-minority voters to split their vote among multiple candidates.

IV. Political cohesion.

A. From a social sciences perspective there are two basic approaches that might be used to measure cohesion of racial/ethnic groups bringing a Section 2 claim: (1) socio-economic similarities and other similarities in life circumstances, and evidence of political coalition building on (local) issues; (2) evidence of voting cohesively for or against minority candidates.

A1(a). Socioeconomic approaches to political cohesion look at whether groups share common points of view, common life situations, and act together for collective purposes of the whole. Of particular relevance for commonality of minority group interests is whether or not the groups each have experienced a history of discrimination. As the Court noted (at p. 68): Plaintiffs can show that the Minority Community is politically cohesive by “providing evidence that Hispanic Black and Asian Communities in Virginia Beach have a history of voting, advocating, or organizing together around similar, social, political, economic, or legal issues in the community.” Judge Jackson’s Opinion then devotes twenty pages (pp. 66-86) to the extensive evidence of sociologically and politically rooted commonality among Black, Hispanic, and Asian populations in Virginia Beach, which lead him to a finding that this aspect of political cohesion is found among Black, Hispanic, and Asian populations in the City, with pages 66-71 devoted to social and economic commonalities.

A1(b). I will not comment further on the sociological and economic perspective on cohesion. Instead, I will focus on the voting patterns that I am already examining in the context of determining whether particular proposed districts in alternative plans create genuine equal opportunity for the minority community to participate in the political process and to elect candidates of choice. I will present this election data under a different and more specific rubric, namely that of “electoral cohesion.”

A2(a) *Electoral cohesion* in the context of a Section 2 case can be understood from a political science point of view as being found when the minority community and the non-minority community generally line up on opposite sides in contests when there is a minority candidate of choice. To establish *electoral cohesion*, I look at the evidence for political cohesion derived from analysis of election returns where reliable inference of minority and non-minority patterns of voting can be done. My analysis parallels that in Judge Jackson’s Opinion pp. 72-86 and reaches, from a political science point of view, exactly the same conclusion, namely that, in terms of electoral cohesion, the minority community in Virginia Beach (African-American plus Hispanic, plus Asian-American) is, as a group, unquestionably politically cohesive in its support of minority candidates, while the White community in Virginia Beach is unquestionably politically cohesive in its opposition to minority candidates. Moreover, this analysis does not change significantly when we examine voting patterns not for all minority candidates but just for those who are also minority candidates of choice.

A2(b) Table 2 allows for straightforward calculation of metrics of minority political cohesion in terms of *electoral cohesion*.

i. In the twelve contests in Table 2 where there is a viable minority candidate, the average rank of the minority candidate among minority voters is 1.5. In contrast the average rank of those minority candidates among White voters is 3.33.

ii. In the eight contests in Table 2 where there is a viable minority candidate who is also the candidate of choice of the minority community, the average rank of the minority candidate among minority voters is, not surprisingly, 1.0. In contrast the average rank of those eight minority candidates of choice among White voters is 2.9.

iii. Single seat contests are more dispositive of patterns of political cohesion for individual candidates than two-seat contests. Of the eight single seat contests in Table 2 where there is a viable minority candidate (six elections), the average vote share of the minority candidate among minority voters is 58.9%. In contrast, the average vote share for the minority candidates among non-minority voters is only 25.1%.

iv . For reasons discussed earlier and also partly in Appendix A, vote share results in single seat contests are more dispositive of patterns of political cohesion for individual candidates than those in two-seat contests, and elections with minority candidates of choice are more dispositive of minority political cohesion than elections without minority candidates of choice. Combining these two factors, we find that, in the six single seat contests in Table 2 where there is a viable minority candidate who is also the candidate of choice of the minority community, the average vote share of the minority candidate among minority voters is 65.5%. In contrast the average vote share for the minority candidates of choice among non-minority voters is only 24.9%

A3(a) The evidence in the paragraphs above shows, on average, the minority community as a whole is politically cohesive in supporting minority candidates and, as might be expected, this is especially true when we restrict ourselves to the candidates of choice of the minority community shown in Table 2

A3(b) The evidence in the paragraphs above shows that White voters are highly politically cohesive in opposing minority candidates and this is true whether those minority candidates are or are not running in single seat election, and whether or not they are or are not they are minority candidates in choice. Other than Ms. Wooten in 2018, White voters never have an estimated level of support for an individual minority candidate above 32.9% and, even including Ms. Wooten,¹⁹ the average level of White support for minority candidates is around 25%.

A2(e) The most compelling evidence for White political cohesion is the fact that in 11 of the 12 contests in which there were minority candidates, the White community ranked a White candidate first.

B. In sum, when we look at the combined minority community, the evidence in the case clearly shows that white/Anglo voters almost never give first place support to any minority candidate for City Council and give such paltry support to minority candidates on average that we can conclude that the White community is politically cohesive in opposition to minority candidates, with some minority candidates ranked sixth or seventh among White voters. In contrast, the minority group as a whole gives clear support to the set of minority candidates, never ranking any below 3rd place, with eight of the twelve being minority candidates of choice who are ranked first by the minority community. In sum, I find

¹⁹ The 2018 contest of which Ms. Wooten was a winner was between two minority candidates, and a third White candidate, but that White candidate was not viable, so in effect, the majority of the White vote had to go to one of these minority candidates.

essentially indisputable evidence of political cohesive patterns of voting for both White voters and for minority voters in terms of electoral cohesion.

C. While the evidence above taken from Table 2 focuses on contests where the minority candidate of choice is a minority candidate, as is shown on pages 78-79 in the Court Opinion of March 31, 2021, there is also evidence of minority cohesion where a White candidate is the candidate of choice. The Court also finds evidence that where a White candidate is the minority candidate of choice, it is much more likely that this candidate is also a White candidate of choice. This is exactly what we would expect if White support for minority candidates of choice varied with the race/ethnicity of the minority candidate of choice, with Whites and minorities sometimes agreeing on the same candidate of choice when the minority candidate of choice was White, but almost never agreeing when the minority candidate of choice was himself or herself a minority member.

D1. For the minority community as a whole, high levels of demonstrated socio-economic cohesion and very high levels of minority electoral cohesion have been shown in the evidence reviewed in the Court Opinion and in my discussion above. Given the limits on election analyses placed by the demographic and geographic facts in this case, to further require that a finding of minority political cohesion must be supported by evidence of voting patterns for each minority group separately is simply, in my view, to ask the mathematically impossible (see Appendix B.).

E. I do not regard it as demonstrating lack of political cohesion of the minority community, if, when there is more than one minority candidate in an election, the minority community does not support each minority candidate at the same level. Similarly, I do not regard it as lack of political cohesion of the White community if, when there is more than one White candidate in an election, it does not support each White candidate at the same level. Instead, where there is a Section 2 (or 14th Amendment) voting rights claim, I define *political cohesion in the election context* as above, namely *electoral cohesion* such that, in general, the minority community supports minority candidates and the White/Anglo community supports White candidates.

V. Evidence for regular loss of minority candidates of choice in voting in city council elections in Virginia Beach

A2 In the election years from 2010 -2018 (including a special election in 2011) there are twelve contests where there is a viable minority candidate and there have been a total of ten separate minority candidates of choice who have run for City Council. Two have run twice. One of these, Ms. Ross-Hammond, won in 2012 but lost in 2016 (see details below). The other, Mr. Cabiness, lost both times. (See Table 2.)

A3. Another minority candidate, Mr. Furman ran three times. However, in two of the three contests in which Mr. Furman ran in during this period he was neither a minority candidate of choice nor do I consider him a viable minority candidate in that contest, and I exclude data on

these two contests from Table 2 below, but I do include data on voting patterns in one of the contests in which Mr. Furman ran (see discussion of Table 2 above).²⁰

B1. There only three victories of minority candidates in City Council Elections over the period 2010-2018 among the twelve contests in Table 2 where there is a viable minority candidate. Of these twelve contests, eight involve a minority candidate of choice, and minority candidates of choice win in three the contests. Of these victories, one was found in an “elect two” contest, and two were found in single seat elections.

B2(a). In the election years from 2010 -2018, in regularly scheduled city council elections in the City of Virginia Beach, the number of successful minority candidacies has been zero in three of five election years, one in one election year, and two in one election year.

B2(b). The only election year in which more than one minority candidate was elected, 2018, involved special circumstances

C1. Based on my independent review, I conclude that, in the plan struck down by the Court, in the period 2010-2018, minority candidates of choice regularly lose in the at-large single seat districts. In such districts minority candidates of choice won in only two of five instances, and both of those two instances could be attributed to special circumstances. The election of Ms. Sabrina Wooten in 2018 occurs in an election year after the filing of this lawsuit (see March 31, 2021 Court Opinion at pp. 88-89, see also *Ibid* at pp. 103-104) in an election with two minority candidates. The election of Ms. Ross-Hammond, who won in a single-seat election in 2012 I also attribute to special circumstances, namely the fact that there were three White candidate splitting the vote. She won in 2012 with only 32.2% of the vote. The conclusion that her win in 2012 can be attributed to White votes being split among three candidates is strongly buttressed by the fact that, even though she was running as an incumbent in 2016, she still lost. In 2016, unlike 2012, she had only a single White opponent. That opponent received nearly 60% of the total vote. In neither 2012 nor 2016 did White voters give Ms. Ross-Hammond more than one-third of their support. (See Table 2 below).

C2(a). Based on my independent review, I conclude that, in the plan struck down by the Court, in the period 2010-2018, absent special circumstances, minority candidates of choice regularly lose in the at-large two seat districts. Of the four minority candidates shown in Table 2 in two-seat elections, the only minority victor in elections in “two-seat” elections is Mr. Rouse in 2018. As noted previously, his victory occurs after the filing of this lawsuit. Mr. Rouse is one of the two minority candidate of choice to win without also being a candidate of choice of White voters.²¹ In a multi-candidate field, Mr., Rouse is a third choice among non-

²⁰ As noted earlier, I also exclude Mr. Wray from this Table, since his minuscule support from the minority community indicated that, from the perspective of the minority community, he was not a viable candidate, even though he did win White support.

²¹ The other is Ms. Ross-Hammond, the special circumstances of whose 2012 victory we discussed in the paragraph above.

minority voters but a first choice among minority voters. Mr. Rouse was able to win in an overwhelmingly White electorate despite this lack of White support because, in 2018, there were four White candidates and two Black candidates in this “vote for two” contest. Mr. Rouse was overall the highest finisher in the contest, but he won with only 26.7% of the total votes cast. Having only come in third among White voters in the election in the “vote for two” election in 2018 that he won, it is very likely that Mr. Rouse, had he been running in a “vote for one” at-large election (or one with similar demography) would, like almost all of his fellow minority candidates running in single seat elections with at-large voting, almost certainly not been the candidate of choice of White voters, and would likely have lost such an election. As can be seen from Table 2, in single seat elections, there is a substantial likelihood that a minority candidate will be facing a single White opponent.

C2(b). Another reason to be skeptical about any claim that Mr. Rouse’s victory in 2018 can be interpreted as showing that Mr. Rouse could win in a future single seat at large contest (or one with similar demographic characteristics to the City as a whole) is that in a “two-seat contest” his total vote came from two kinds of voters: voters who ranked him first and voters who ranked him second. While voters in the first category would presumably vote his first again in a single seat contest against one or more of the same set of candidates whom he defeated in 2018, that voters who voted for him as their second choice would vote for him as their first choice in a single seat election is much more dubious. Thus, we might expect that Mr. Rouse might do less well in a single-seat competition than his overall first place rank in the two-seat contest, based on plurality vote shares, might suggest. Projecting two seat contests, such as those won by Mr. Rouse, into single seat elections is very difficult, since we do not know how much of Mr. Rouse’s support in the “vote for two” situation came from voters who placed him first in their ranking as opposed to voters who placed him second in their ranking. Also we might reasonably expect that some of the voters who voted for Mr. Rouse used their second vote to vote for the other minority candidate in the race, Mr. Bright, so we cannot simply add up the votes for Mr. Rouse and Mr. Bright to assess likely future voting support for Mr. Rouse.²²

C2(c). The expectation that Mr. Rouse in 2018 would have lost had he been running against a less-divided opposition in a single seat at-large contest is strongly reinforced by a comparison of the outcome and vote share in the two contests (2012 and 2016) involving minority candidate Ms. Ross-Hammond in a single-seat district. In 2012 she won against a divided White field, and in 2016 she lost, against a single White candidate. Ms. Ross-Hammond was the minority

²² In situations where voters may cast more than one ballot because more than one winner in the district will be chosen, in principle, voting for multiple candidates need not harm a group’s chance of electing one or more candidates of choice as long as the number of candidates among whom the group’s votes are split is less than or equal to the number of seats to be filled. However, in practice, in considering candidates of the same race or ethnicity, voters may choose to vote for only the one of this set whom they most prefer if they believe that only one candidate of a given ethnicity has a plausible chance to be elected and they would want such a candidate to be the one they most prefer. Comparing “total ballots cast” in the “vote for two” elections to turnout in the “vote for one” contests that same year reveals that the total number of ballots cast in “vote for two” elections is substantially less than twice the number of voters at the poll, i.e., some voters do not cast both of their ballots, but “bullet vote” for a single candidate.

community's clear candidate of choice in both years, and the non-minority community's candidate of choice in neither year. Thus, two of the three victories of minority candidates of choice over this period (Mr. Rouse in at-large two-seat district, in 2018, and Ms. Ross-Hammond in a single seat contest, in 2012) can largely be explained by the contest which they won being one with many White candidates splitting the White vote, thus allowing a minority candidate to win with only a plurality of the vote (26.7% in 2018 in the two-seat contest, and 32.2% in 2012 in the single-seat contest) .

D1. In sum, in looking at the three City Council elections in 2010-2018 where there is a minority victory, a plausible expectation for two of these three instances of minority success is that the minority candidate who won that election would have lost had there been fewer White candidates splitting the White vote. I conclude that there is a pattern of minority loss in five of eight elections with a minority candidate, and an expected pattern of minority loss in an additional two future single seat elections that would be head-on-head contests or nearly head-on-head contests that might be conducted in districts whose racial demography matches that of the City as a whole. Thus, I find a pattern of actual or expected future minority loss in seven of eight of the elections shown in Table 2 where there is a minority candidate of choice.

D2. However, even the "seven of eight" expected minority loss calculation understates the degree to which the present electoral system has foreclosed minority opportunity to succeed in the electoral arena. Because minority candidates are deterred from running for at-large elections in the city by their low chance of electoral success, counting the number of minority candidates who ran and lost substantially understates the actual dilutive effect of the at-large plan struck down by the Court in terms of that plan's effects on minority opportunity to participate in the political process and elect candidates of choice.

D3. Moreover, the level of success of minority candidates under the present at-large election rules is far below that which could be expected in a ten-district single seat plan that is based on the electoral geography of the City. In particular, it is substantially below what can be expected in the Plaintiffs' proposed remedial map, and in the "one person, one vote" population-compliant illustrative map that I introduce later in this Report. Under the current (and now invalidated) City Council election rules, in no year have there been three minority candidates of choice on the city council who are themselves member of the minority community.

VI. Summary of fact-based conclusions about polarization, cohesion, and usual minority loss

A. As the Court previously concluded, and based on my own independent review of the evidence, voting in the City of Virginia Beach in its non-partisan city council elections is clearly polarized along racial/ethnic lines.

B. As the Court previously concluded, and based on my own independent review of the evidence, the minority community is politically cohesive in its support for the set of minority candidates and the non-minority community is politically cohesive in its support for non-minority candidates.

C. As the Court previously concluded, and based on my own independent review of the evidence, minority candidates of choices regularly lost in at-large elections under the previous map. Minority candidates would have won far more often had only minority voters been voting, i.e., minority candidates regularly lost due to white bloc voting. Two of the three apparent exceptions are ones where a large number of White candidates split the White vote and/or in a “vote for two” situation that will not be found in the remedial single seat maps.

VII. REMEDY PHASE: Identifying minority opportunity districts

A1. That the voting behavior of the three groups (African-Americans, Hispanics, Asian-Americans) cannot be reliably separately estimated is not in any way a barrier to a factual finding that it is possible to create districts in which the three groups, taken collectively, have a realistic opportunity to elect a candidate of choice.²³ More particularly, in the City of Virginia Beach, that a given district in some proposed plan is a *minority opportunity district* can be directly demonstrated by a showing that, in a recent bi-racial/bi-ethnic contest with one or more viable minority candidates in one or more of the previous at-large elections to the city council, a minority candidate of choice has a realistic opportunity to win in the proposed district were there to be a single viable minority candidate²⁴

A2. The clause, “were there to be a single viable minority candidate,” was added in the sentence in the paragraph above specifying the applicability of the *method of projection* for reasons of precision. Common sense tells us that, for any group, even one constituting a majority of the citizen vote age population in a district, given the nature of plurality voting rules in a single seats contest, when a group split its vote among multiple candidates, such vote splitting will reduce the likelihood that the most favored candidate or candidates of the group will be elected. This observation is true both for the set of white/Anglo voters and for the minority group.

B1. The projection method, which has become one of the now standard statistical methods for racially polarized voting analysis – with its reliability sustained by multiple courts – can be applied in Virginia Beach to assess whether a proposed remedial single member district can be characterized as a *minority opportunity district* were there be a minority candidate of choice in the contest. In the next section I use this method, to evaluate minority opportunity in the four most heavily minority districts in the Plaintiffs’ proposed ten-district remedial map (including the three 50%+ CVAP districts in that map) and the four most heavily minority districts in the Defendants’ two proposed remedial maps. And I have also applied this method to the four most

²³ See Appendix B.

²⁴ Also relevant may be data from exogenous elections which are of comparable type to the city council elections and which take place in a geographic unit in which the proposed district is wholly embedded.

heavily minority districts in the illustrative remedial map I present to the Court that is based on 2020 population data.

B3. To assess *minority opportunity to elect* I relied on six single seat elections over the period 2010-2018 where there are minority candidates of choice. Five of these are ones where the minority candidate of choice lost. Projections for four of these elections, ones for City Council where a minority candidate lost, are found in Table 1 of the “Declaration of Dr. Douglas M. Spencer,” in the remedial phase of the litigation, July 30, 2021, at p. 4 (Ms. Ross-Hammond in 2016,²⁵ Mr. Cabiness in 2014, Mr. Sherrod in 2011 and Ms. Bullock in 2010). Projections for the fifth contest, the Sheriff’s race in 2017, with Mr. Bell the minority candidate,²⁶ are found in Table 2 of the “Declaration of Dr. Douglas M. Spencer,” in the remedial phase of the litigation, July 30, 2021, at p. 7.²⁷ The sixth election I use for projection is the 2018 contest won by Ms. Wooten. For this contest I have done my own calculations using the same methodology as Dr. Spencer, which is the standard methodology for projections

B4. In assessing overall minority opportunity to elect using these six elections I looked at how many of those elections were ones in which the minority candidate won in the newly configured proposed remedial district. For four of these contests (Ms. Wooten, Mr. Bell, Ms. Ross-Hammond, and Ms. Bullock), I look to see whether the minority candidate is projected to receive a majority of the vote. For two of these (Mr. Cabiness, and Mr. Sherrod) I look to see whether the minority candidate is projected to win a plurality of the vote.

B5. As discussed in Appendix A, estimates for “vote for two” contests need to be interpreted with great care, and I do not rely on the projections of the election results in two-seat elections in 2010 and 2018 shown in Table 1 of the “Declaration of Dr. Douglas M. Spencer,” in the remedial phase of the litigation, July 30, 2021, at p. 4. Projecting results from two-seat contests into a single seat contest can raise complications vis-à-vis reliable estimation. Rather than seeking ways to improve estimations based on projecting results from two-seat contest into single seat contests, I have avoided this problem by confining myself to projecting results from

²⁵ For the reasons given earlier in the Report I find the Ms. Ross-Hammond 2016 contest against a single White opponent to be more probative of future election results in newly configured single seat districts than her 2012 plurality victory against multiple White opponents.

²⁶ Like Dr. Spencer (numbered paragraph 20 at p.7) I believe that the Sheriff’s race is the most probative of the exogenous elections in Table 2 of his July 30, 2021 Declaration because it not only featured a Black candidate who was the minority candidate of choice, but “it was for a city-wide office as opposed to state or federal office.” However, like the other exogenous elections in his Table 2, but unlike city council elections, it was a partisan contest.

²⁷ These projection are for the three most heavily minority districts in the Plaintiffs’ map, and the four most heavily minority districts in the Defendants’ map. To assure parallel structure, I also calculated the projections into the fourth most heavily minority district in the Plaintiffs map. And in Table 3 below I also report data for the four most heavily minority districts for the illustrative equ-population remedial map I provide the Court below. These new analyses directly parallel those done by Dr. Spencer.

single seat contests into future single seat contests. Without making use of the more uncertain projections from two-seat contests into single seat contests, there are enough single seat contests over the period 2010-2018 for me to reach reliable conclusions about *minority opportunity* to elect in the most heavily minority districts in Plaintiffs' plan and Defendants' plan(s), and in an illustrative plan that I present to the Court intended to cure defects that I found in each of the two ten-district plans submitted to the Court.

VIII. REMEDY PHASE: Evaluating the suitability of the three proposed remedial maps submitted by Defendants or Plaintiffs as remedies for the vote dilution identified in the Court Opinion of March 31, 2021.

A. The Defendants' seven -district map

A1. The seven single member district and three at-large district plan submitted by the City of Virginia Beach can be rejected on multiple grounds. First, it retains an at-large feature for some of its districts. But the degree to which an at-large district diluted minority voting in Virginia Beach was a central element of the Court's finding that the previous map (with three at-large districts and seven districts voting at-large but with a residency requirement for candidates) violated the Voting Rights Act. Second, the combined single seat and at-large map creates at most two *minority opportunity districts* whereas, given the racial geography (and the legal conclusions of the Court as to Section 2 violation conditions having been met) the creation of three *minority opportunity districts* appears to be mandated.²⁸

A2. But most importantly, this seven single seat district and three at-large districts plan can be rejected because it is no longer legal. As the Court notes in its March 31, 2021 Opinion, on March 22, 2021, Defendants filed a Notice of New Authority indicating that on March 18, 2021, the Governor of the Commonwealth of Virginia signed House Bill 2198 into law. ECF No. 204 at Exhibit 1. The law amends Section 24.2-222 of the Virginia Code to prohibit at-large voting for candidates "in a city or town that imposes district based or ward-based residency requirements for members of the city or town council." *Id.* The law will take effect on January 1, 2022, before the next City Council election on November 8, 2022. Because this law makes the 7-3 plan an illegal one, and thus one which must be rejected, I give it no further mention in the Report.

B. Table 3 below shows the minority CVAP estimates for the Plaintiffs' initially submitted 10-district map, the Defendants' initially submitted 10-district map, and for an illustrative 10-

²⁸ While the minority community possesses no right to proportional representation, with 40.5% of the total population (using 2020 census data) and 32.8% of the CVAP as estimated in 2019, and with that population geographically concentrated in the western area of the city, with single-seat remedies readily available, there is no valid reason for the minority community to have its voting strength diluted by voting rules that submerge minority population concentrations with the votes of the overwhelmingly white/Anglo voting population in the City at-large.

district map I have prepared that satisfies one person, one vote, maintains the three 50%+ CVAP districts found in the Plaintiffs' map, and eliminates all incumbent pairings found in either or both Defendants' and Plaintiffs' Map and, in particular, places the two minority incumbents in heavily minority districts with no White incumbent in place. These estimates are taken from Dave's Redistricting App or from a report by Plaintiffs.

Table 3.

Minority CVAP in Plaintiffs' 10-District Map and the Defendants' 10-District Map (Plaintiff map data for H+B+AA taken from "Plaintiffs' Proposed Remedial Plan and Recommendations for Court-Appointed Expert," July 1, 2021, at p.12); Defendant map data for H+B+AA taken from Dave's Redistricting App using the block equivalency files provided to me in electronic form).²⁹.

	(a) Defendants' Proposed Remedial Map		(b) Plaintiffs' Proposed Remedial Map
	initial Map (not population adjusted)		initial Map (not population adjusted)
1	47.8%	1	30.3%
2	44.5%	2	24.5%
3	47.5%	3	31.9%
4	34.4%	4	51.1%
5	46.3%	5	20.3%
6	23.4%	6	22.3%
7	8.8%	7	52.8%
8	25.7%	8	12.8%
9	31.9%	9	21.4%
10	20.3%	10	52.3%

²⁹ I have reported in this Table the percentages shown in Plaintiffs' calculations of the CVAP in their proposed remedial district. When I calculate these percentages using Dave's Redistricting App (DRA), I get slightly different estimates -- ones that are slightly higher for the heavily minority districts. I believe these minor differences may arise from how CVAP estimates at the block level are interpolated based on the VAP percentages in the block. The CVAP numbers I found on DRA were accessed on September 25, 2021 and are based on the latest 2020 VAP figures rather than the 2010 VAP figures used for the CVAP estimates generated in July 2021 before the 2020 Census data was available. There may also be minor differences in how population from split VTDs was allocated. In any case, regardless of which estimates one adopts, there are three 50%+ CVAP districts in the Plaintiffs' map.

C. Table 4 below shows projected results of the six single seat contests identified in the previous section for the Plaintiffs' initially submitted 10-district map and the Defendants' initially submitted 10-district map. These estimates are primarily taken from Table 1 (p. 4) and Table 2 (p.7) of the Declaration of Dr. Douglas M. Spencer, July 30, 2021.³⁰ Cells with black bolding represent elections projected to be won by a minority candidate with a majority of the vote. Cells with blue bolding represent elections projected to be won by a minority candidate with a plurality of the vote.

³⁰ To compare the Plaintiffs' and the Defendants' 10-district remedial plans for the six elections shown in Table 2. I use the projection data from Table 1 (p. 4) and Table 2 (p.7) of the Declaration of Dr. Douglas M. Spencer, July 30, 2021. Dr. Spencer reports projection results for the three most heavily minority districts in the Plaintiffs' map and for the four most heavily minority districts in the Defendants' map. For completeness I also report projection data for the fourth most heavily minority district in Plaintiffs' map. These are projections which I do based on election data provided me at the VTD level. In the case of split precincts the projections are approximated from the degree to which VTD CVAP is located within a district, using block level data.. To the best of my knowledge, Dr. Spencer does not report projection data for the 2018 contest won by Sabrina Wooten. I replicate his methodology for that election. To verify that Dr. Spencer and I are using the same methodology, I directed my research assistant to replicate Dr. Spencer's calculations for the elections reported in Table 4 for election projection which were previously provided by Dr. Spencer. For both Defendants' and Plaintiffs map, the projections done by my research assistant gave results essentially identical to those previously found by Dr. Spencer. Whatever trivial differences there are appear to be due to minor changes in VTD structure over the period 2010-2018 or the treatment of split VTDs. For projections into the districts in my own proposed illustrative map, introduced at the end of this Report, I again use this same methodology.

Table 4.
Projections into Four Most Heavily Minority Districts in Plaintiffs' 10-District Map and
Defendants' 10-District Map

Plaintiffs' Map

Candidate	4	10	7	3
2018 Wooten	70.5%	69.9%	67.1%	64.4%
2017 Bell (Sheriff)	59.1%	53.7%	50.9%	43.8%
2016 Ross-Hammond	55.4%	47.3%	45.3%	42.4%
2014 Cabiness	33.2%	26.0%	25.0%	18.5%
2011 Sherrod	43.5%	39.2%	37.6%	27.7%
2010 Bullock	55.5%	56.8%	57.9%	47.2%

Defendants' Map

Candidate	1	5	3	2
2018 Wooten	70.1%	67.8%	68.5%	64.3%
2017 Bell (Sheriff)	57.8%	51.4%	47.0%	45.7%
2016 Ross-Hammond	53.7%	47.3%	43.3%	42.8%
2014 Cabiness	31.3%	27.0%	22.1%	20.0%
2011 Sherrod	42.3%	37.0%	36.7%	30.2%
2010 Bullock	54.7%	53.6%	55.2%	50.6%

D. The ten-district plan proposed by the City of Virginia Beach is not suitable as a voting rights remedy.

D1(a). The Plaintiffs have proposed a map with three districts that, based on past elections will, with high probability, each select the minority candidate of choice, but where there are no additional districts in which minorities are expected to have a substantial chance to elect candidate of choice. The Defendants have opted for a plan that more evenly allocates minority population across four districts.

D1(b). Unlike the Plaintiffs' map, the Defendants' remedial plan contains exactly zero majority-minority districts in terms of citizen vote age population, even though the Plaintiffs' remedial map demonstrates that *three* majority minority districts can be drawn in terms of citizen vote age population based on geographically contiguous minority populations.

D2(a). The fact that there are no majority minority CVAP districts in the City's proposed remedial map is, on its face, an apparent violation of Section 2 of the Voting Rights Act as the Supreme Court has interpreted preconditions for a Section 2 lawsuit in *Bartlett v. Strickland*. 556 U.S. 1 (2009).

D2(b). However, despite the language of *Bartlett v. Strickland* as to the preconditions for bringing a Section 2 lawsuit, in *Alabama Black Caucus*, 135 S. Ct. 1257 (2015), involving a challenge to a plan in a jurisdiction then covered under Section 5 of the Voting Right Act that was drawn before the *Shelby v. Holder* 570 U.S. 529 (2013) decision striking down the trigger clause of Section 5 of the Voting Rights Act, the Supreme Court has now made clear that Section 5 "does not require a covered jurisdiction to maintain a particular numerical minority percentage," but instead "requires the jurisdiction to maintain a minority's ability to elect a preferred candidate of choice" The Court concluded that, in "rel[ying] heavily upon a mechanically numerical view as to what counts as forbidden retrogression," the district court failed to ask the question critical to the narrow tailoring analysis: To what extent was the legislature required to "preserve existing minority percentages in order to maintain the minority's present ability to elect the candidate of its choice?" By analogy, a district without a minority CVAP majority could, I believe, nonetheless be defended against a Section 2 challenge if it could be shown that each of the three most heavily minority districts in the Defendants' plan was still a *minority opportunity district*.³¹ However, as discussed below, from a social science perspective, the Defendants' map clearly fails this test.

³¹ Taking into account the language of *Alabama Black Caucus* cited to above, recently, district courts accepting claims brought under the *Shaw v. Reno* 570 U.S. 529 (1993) test for a racially preponderant motive have also implemented as a court-ordered remedial plans some districts with less than a 50%+ Black (citizen) voting age population in area of the state where a 50%+ CVAP district might have been drawn, despite recognizing the Court's obligation to also satisfy the strictures of Section 2 in a court-ordered map. In such instances the Court has recognized a less than 50%+ CVAP district as one providing the minority community a realistic opportunity to elect candidates of choice See e.g., *Personhuballah v. Alcorn*." Civil Action No 3: 13cv678 E.D. Virginia (filed January 7, 2016); *Golden Bethune-Hill v. Virginia State Board of Elections*" Civil Action No 3: 14cv852 E.D. Virginia (filed February 14, 2019). In City Council elections

D2 Let me first note that the three best performing minority districts in the Defendants' map are not as suitable as voting rights remedies as the three best performing minority districts in Plaintiffs' map.

D2(a) Comparing the number of elections with minority victories out of the six single seat elections in the three strongest performance districts in each map, the Plaintiffs' map has one district with 5 of 6 wins, and two with 4 of six wins, while the Defendants' map has one district with 5 wins, one with 4 wins, and one with 3 wins, so that the third highest performance district in Plaintiffs' map is, *ceteris paribus*, more likely to perform as a minority opportunity district than the third highest performance district in Defendants' map.

D3(b) Moreover, there are 18 projected percentages for the three most likely to elect districts for each map in Table 3 (districts 4, 10, and 7 in Plaintiffs' map versus districts 1, 5 and 3 in Defendants' map) If we compare the Plaintiffs remedial map with the Defendant remedial map, we find higher numbers for the projected election values in the Plaintiffs map in 16 of these 18 possible comparisons between the two maps.

D3(c) The Plaintiffs' map has its third best performing district with a stronger claim to be a minority opportunity district than the corresponding third best performing district in the Defendants' map; and also that expected vote shares for minority candidates are nearly uniformly higher in the Plaintiffs' map than in the Defendants' map when we compare the first, second and third best performing district in Plaintiffs' plan to the corresponding districts in Defendant's plan. Thus, while the differences between the two plans are not that large, they are consistently in favor of the Plaintiffs plan vis-à-vis providing an effective remedy for the vote dilution found.

D7. In a choice between plans, the weight to be given the considerations about minority opportunity to elect identified above (and shown in Table 3) can only be determined by the Court.

E1. But results from projections are not only reason, or perhaps even the most important reason, to strongly prefer Plaintiffs Plan to Defendant' Plan from the standpoint of effective voting rights remedy. While the results in Table 3 show that, on their face, both the Defendants' map and the Plaintiffs' map have three opportunity districts, though with the third such district in Defendants' plan inferior to the third such district in Plaintiffs plan, once we look in more detail at the two maps, we would no longer characterize Defendants' map as having three minority opportunity districts. Because the Defendant's map places White incumbents in two of the most heavily minority districts in its map, indeed pairing one of them with a minority incumbent, this severely reduces the equal

in Virginia Beach. after carefully assessing the minority opportunity to elect in the specific parts of the city where the district is being drawn, prudence in assessing minority opportunity to elect suggests the appropriateness of drawing districts with a 50%+ CVAP. (See Table 4 and Table 6 later in the Report.)

opportunity of the minority community to elect candidates in those districts.³² And there was no need, given the geography, to place the second minority incumbent in a non-minority district, as is done in Defendant's map. This, too, operates to reduce minority opportunity to elect candidates of choice. In sum, Defendants' map cannot be considered a remedy for the voting rights violations found by the Court. It does not actually have three districts in which minorities have, realistically, an equal opportunity to elect candidates of choice. In contrast, the districts drawn in the Plaintiffs' proposed remedial map do not pair any White incumbents with a Black incumbent (using either the 2020 or the 2021 locations of incumbents), and they locate both Black incumbents in heavily minority districts, and they avoid the placement of White incumbents in heavily minority districts. Below I provide details in support of the statements above. Also see Table 6 later in the Report.

E1(a). The configuration of the districts in the defendant's proposed ten-district map places the home of a White incumbent, Mr. Michael Berlucchi, inside one of the districts identified by the City as a minority opportunity district, District 5. ("Declaration of Dr. Douglas M. Spencer" in the remedial phase of *Holloway*, July 21, 2021, numbered paragraph 15 at p. 5)

E1(b). The placement of a White incumbent, Mr. Berlucchi, in a heavily minority district in the Defendants' map will make it less likely that a minority candidate of choice will be able to prevail in elections in the district, despite the district's racial demography.

E2(a) The configuration of the districts in the Defendant's proposed ten-district map places the home of a black incumbent, Mr. Aaron Rouse, outside any of the most heavily minority districts in the map and places him in a district (District 4 in the Defendants' map) with 39.2% minority CVAP.

E2(b). The placement in Defendants map of Mr. Rouse, who is one of only two Black City Council members, in a heavily White district, will make unlikely that this minority candidate of choice, who has shown strong support from the minority community, but not from the White community, will be able to continue to represent the minority community.

E2(c) When I project the six bi-racial/bi-ethnic contests identified in Table 2 into District 4 in the Defendants' map, only one of the six elections is a win for the minority candidate.

E2(d). As can be shown by Plaintiffs' plan (and also the map I prepared), placing Mr. Rouse in a White majority area was not compelled by the geography despite the proximity of the homes of Mr. Rouse and the appointed incumbent Mr. Holcomb. In the Plaintiffs' map, rather than being placed in an overwhelmingly White district, Mr. Rouse is placed in a district, District 10, which is a 50%+ minority CVAP (district).

³² Acting under my instructions, my research assistant geocoded the residences of 2021 incumbents based on their street addresses provided to me by the parties to locate their district placement on the various maps. I believe that this geocoding is accurate. If there are errors, I will of course, make the necessary corrections to this Report.

E3(a) In the appointment by the City Council in August of 2021 of Mr. Rocky Holcomb to fill the unexpired term of Ms. Jessica Abbot, they have appointed to office someone whose residence is in the same district, District 3 in Defendant's map, as minority incumbent Sabrina Wooten. Thus, in the Defendants' map there will also be a White incumbent in place if Ms. Wooten choose to run for office again. Moreover, this White incumbent has been located in a heavily minority district. While no incumbent has a right to re-election, appointing to office a new White incumbent who lives in the same district in the Defendants' map as one of the only two minority incumbents was not necessitated by the geography of the City. And there is also an issue of having two incumbents in the same district whose terms expire at different times, one in 2022 (Mr. Holcomb), with a Special Election required, and one in 2024 (Ms. Wooten).

E1(b). The placement of a White incumbent, Mr. Holcomb, in a heavily minority district in Defendants' map will make it less likely that a minority candidate of choice will be able to prevail in elections in the district, despite the district's racial demography.

F1(a) In sum, Defendants' mapping and incumbent replacement choices will operate to substantially and unnecessarily reduce minority opportunity in the map configuration chosen by Defendants as a supposed voting rights remedy. The geographic placement in Defendants' 10-district map of a Black incumbent (Mr. Rouse) in a non-minority area, of a White incumbent (Mr. Berlucchi) in a heavily minority area, and of a second White incumbent (Mr. Holcomb) in a heavily minority area in which there is also a minority incumbent (Ms. Wooten), forcing a pairing, seems especially problematic given the history of this litigation and the long period in which minority voting strength in the City of Virginia Beach was diluted by the electoral structure of the city's elections for city council.

F1(b) These placements will act as barriers to the ability of the minority community in the City to elect candidates of choice. In a choice between plans, the differences in incumbent placement choice between the two plans strongly argues for Defendants' map being an inappropriate remedy in terms of the expected equal opportunity of the minority community to elect candidates of choice. Despite being offered as a remedy for a voting rights violation, and despite an apparent concern to create four heavily minority districts in the area of greatest minority population concentration, the City Council Map would operate in a dilutive fashion and not provide an effective remedy for the Section 2 voting right violation found. Not only are its three minority opportunity districts inferior to those in the Plaintiffs' map, but there are grave defects in how Defendants have reduced minority opportunity by its choices of where to locate incumbents.

G1(a). The Defendants' map deals with both of the minority incumbencies and two of the White incumbencies in an unacceptable way, unnecessarily placing a Black incumbent in a heavily White district and also unnecessarily placing each of two White incumbents in a heavily minority district, in one of which there is also a pairing with a minority incumbent. In my view it does not provide a satisfactory remedy for the voting rights violations found by the Court.

G1(b). Plaintiffs' map avoids all of these problems. Overall, the Plaintiffs' map provides three strong minority opportunity districts, which are, on balance, stronger than those in the Defendants' map.

H. Because of the defects in the Defendants' map with respect to its suitability as a voting rights remedy, I do not discuss it any further in the remainder of this Report.

IX. REMEDY PHASE: The special master illustrative map

A. Neither the Defendants' map nor the Plaintiffs map in their present incarnations satisfy "one person, one vote." Using the most recent census data, the population deviation in the Defendants' map is 17.5% and it is 14.2% in the Plaintiffs' map. Thus, a new constitutional map still remains to be created.

B. While there are many positive features in the Plaintiffs map, there are special responsibilities for courts in ordering a remedial map. Thus, rather than simply recommending that the Court adopt Plaintiffs' map after its population has been adjusted to be in "one person, one vote" compliance, I have instead opted for providing the Court an alternative equipopulous map. Key features of that map are shown in Table 5, Table 6, and Table 7 (with Table 7 also showing a comparison to the Plaintiffs' map).

Table 5.
Key Features of the Special Master Illustrative Equipopulous Remedial Map with Incumbency
Unpairings

	(a) Minority CVAP percentages (minority = 100-Non- Hispanic White)
1	35.1%
2	27.6%
3	36.4%
4	52.3%
5	22.5%
6	24.7%
7	53.2%
8	16.0%
9	24.4%
10	54.6%

(b) projected estimated votes

Candidate	4	10	7	3
2018 Wooten	71.2%	69.5%	67.3%	64.8%
2017 Bell (Sheriff)	59.8%	54.5%	50.4%	45.7%
2016 Ross-Hammond	56.8%	47.2%	44.9%	43.3%
2014 Cabiness	34.6%	27.1%	25.0%	18.5%
2011 Sherrod	43.6%	39.0%	36.8%	29.1%
2010 Bullock	55.9%	56.8%	57.8%	47.8%

Table 6.
Population, Voting Age Population, and Citizen Voting Age Populations for Districts in the
Special Master Illustrative Map

Citywide

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	460,224	58.7%	8.8%	21.8%	10.0%	40.5%	41.3%
2020 VAP	358,086	61.5%	7.6%	20.1%	9.4%	37.2%	38.5%
2019 CVAP	335,265	65.8%	6.4%	19.7%	6.8%	32.8%	34.2%

District 1

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	47,583	58.6%	7.3%	21.7%	11.4%	40.4%	41.4%
2020 VAP	37,160	61.3%	5.9%	20.1%	11.1%	37.2%	38.7%
2019 CVAP	37,126	64.9%	4.6%	21.2%	8.0%	33.8%	35.1%

District 2

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	45,624	68.5%	6.7%	12.7%	10.8%	30.2%	31.5%
2020 VAP	34,603	70.1%	5.7%	12.8%	9.8%	28.3%	29.9%
2019 CVAP	30,675	72.4%	4.6%	14.3%	7.5%	26.5%	27.6%

District 3

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	47,230	55.2%	10.0%	24.9%	9.2%	44.0%	44.8%
2020 VAP	37,042	58.3%	8.7%	23.0%	8.7%	40.4%	41.7%
2019 CVAP	34,927	63.6%	7.9%	21.5%	5.6%	35.0%	36.4%

Table 6.
Population, Voting Age Population, and Citizen Voting Age Populations for Districts in the
Special Master Illustrative Map (cont.)

District 4

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	43,810	37.1%	12.3%	42.3%	8.5%	63.1%	62.9%
2020 VAP	34,389	40.8%	11.0%	39.2%	8.5%	58.7%	59.2%
2019 CVAP	30,440	47.7%	8.7%	34.8%	6.8%	50.3%	52.3%

District 5

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	45,062	70.5%	8.9%	12.1%	6.8%	27.8%	29.5%
2020 VAP	34,610	72.8%	8.0%	11.2%	6.0%	25.1%	27.2%
2019 CVAP	34,461	77.5%	7.2%	10.2%	3.9%	21.3%	22.5%

District 6

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	43,686	68.1%	9.1%	17.3%	4.4%	30.7%	31.9%
2020 VAP	35,577	71.3%	7.8%	15.2%	4.1%	27.0%	28.7%
2019 CVAP	33,316	75.3%	4.4%	16.5%	2.5%	23.4%	24.7%

Table 6.
Population, Voting Age Population, and Citizen Voting Age Populations for Districts in the
Special Master Illustrative Map (cont.)

District 7

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	45,773	42.8%	8.9%	31.0%	17.7%	57.6%	57.2%
2020 VAP	34,514	44.9%	7.6%	29.7%	17.4%	54.6%	55.1%
2019 CVAP	33,828	46.8%	8.6%	30.5%	12.5%	51.6%	53.2%

District 8

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	46,779	79.4%	5.4%	7.7%	5.7%	18.9%	20.6%
2020 VAP	37,177	82.0%	4.5%	6.7%	4.9%	16.1%	18.0%
2019 CVAP	34,810	84.0%	3.4%	6.8%	4.9%	15.0%	16.0%

District 9

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	48,102	66.5%	8.8%	15.0%	8.4%	32.2%	33.5%
2020 VAP	38,324	69.2%	7.4%	13.8%	7.8%	29.0%	30.8%
2019 CVAP	35,693	75.6%	5.8%	12.0%	5.1%	22.9%	24.4%

District 10

	Total	NH White	Hispanic	NH Black	NH Asian	B+H+AA	combined
2020 Pop.	45,821	38.8%	10.8%	34.0%	16.8%	61.6%	61.2%
2020 VAP	34,690	41.5%	9.5%	31.5%	16.7%	57.8%	58.5%
2019 CVAP	29,989	45.4%	9.0%	32.5%	11.4%	52.8%	54.6%

Table 7.
Incumbency Pairings in Plaintiffs' Map and the Special Master Illustrative Map, Along with
(expected) Date of Next Election in the District

****Rocky Holcomb is an appointed incumbent and will be up for election in a November 2022 special election to fill out a term that expires in 2024.**

****The current vacancy for the Lynnhaven District (2022) is not included in the SM Map list of incumbents; if that vacancy is filled before the Court adopts a new map the residence of that appointed incumbent may create an additional pairing.**

Plaintiffs' Map

District	Incumbent (s)	Sequence
1	OPEN SEAT	2024
2	Barbara Henley (2022)	2022
3	Rocky Holcomb* (2024) / Michael Berlucchi (2024)	2024
4	OPEN SEAT	2022
5	Rosemary Wilson (2024)	2024
6	Guy Tower (2022)	2022
7	Sabrina Wooten (2024)	2024
8	VACANT (2022)	2022
9	John Moss (2022) / Louis Jones (2022)	2022
10	Aaron Rouse (2022)	2022

SM Map

District	Incumbent (s)**	Sequence
1	Rocky Holcomb (2024)	2022/2024
2	Barbara Henley (2022)	2022
3	Michael Berlucchi (2024)	2024
4	OPEN SEAT	2022
5	Rosemary Wilson (2024)	2024
6	Guy Tower (2022)	2022
7	Sabrina Wooten (2024)	2024
8	Louis Jones (2022)	2022
9	John Moss (2022)	2022
10	Aaron Rouse (2022)	2022

C1. Most importantly, my illustrative map incorporates the most important features of a remedial map from a voting rights perspective:

- i. no pairing of White and minority incumbents, or of the two Black incumbents (see Table 7, cf. Table 6),
- ii. no placement of a minority incumbent in a majority White district (see Table 7, cf. Table 6), and
- iii. no placement of a White incumbent in a majority-minority district or a very heavily minority district (see Table 7 cf. Table 6)
- iv. three 50%+ CVAP districts (see Table 6)
- v. three *minority opportunity to elect* districts (see Table 5).

C2. As we can see from comparing Table 3 and Table 6, the three 50%+ CVAP districts in the Special Master Map are comparable in minority CVAP to their counterparts in the Plaintiffs' map. However, since both maps not only have three 50%+ CVAP districts but each also deals appropriately with items i. through iii. above, more important than the CVAP percentages themselves, are the estimates for each of these districts re *minority opportunity to elect*. As we can see from comparing Table 4 with Table 5, the two maps are virtual twins: of 18 direct pairwise comparisons in the 50%+CVAP districts, 9 marginally favor the SM map, as opposed to 7 of 18 marginally favoring the Plaintiffs map, and 2 of 18 being ties.

D. The new SM map, in addition to providing an equipopulous remedial map, and preserving features essential in any map intended to fully remedy the voting rights violations found by the Court, is intended to address three relatively minor issues that do not raise constitutional questions but which better satisfy other desiderata:

- i. reducing incumbency pairings of White incumbents, and in the process facilitating implementation of the City Council's scheme for staggered elections,
- ii. slightly improving compactness, and
- iii. slightly reducing VTD splits.

D1. Incumbency pairings and (expected) date of next election in the district for the Plaintiffs' map, the Defendants' map and the Special Master Illustrative map are provided in Table 6.

D1 (a). Incumbency pairings, unless they involve minority incumbents, do not raise constitutional/voting rights issues and incumbents have no right to re-election.³³ I would not seek to deal with incumbency issues if doing so interfered with the creation of the *minority opportunity districts* that are needed to resolve the voting rights violations found by the Court. I believe that I was able to deal with incumbency in a satisfactory fashion by creating a map which placed the White incumbents paired in the Plaintiffs' map outside any of the heavily minority concentrations in the City of Virginia Beach, and which placed the two minority incumbents inside the majority- minority districts. As can be seen from Table 6, Plaintiffs' map has two districts with incumbent pairings. These are pairings of White incumbents. As also can be seen from Table 6, the illustrative special master map has unpaired (vis-a-vis the set of incumbents in place ca. September 19, 2021) each of these pairings. In the SM map Mr. Berlucchi, Mr. Holcomb, Mr. Moss, and Mr. Jones each have their own district. These unpairings were done with only minor consequences for other features of the plan. Making them did, however, require slightly decreasing mean district compactness, and did require a handful of additional VTD splits.

D1(b). The pairing of Mr. Moss and Mr. Jones in Plaintiffs' map does not raise problems for election staggering since each term expires in 2022. However, the pairing of Mr. Holcomb and Berlucchi in the same district might be seen as problematic. If we were to go by the residential location of Mr. Holcomb, then this district would be up for a special election in 2022. If we were to go by the residential location of Mr. Berlucchi, the next election in the district would not be until 2024.³⁴

³³ Even though this is not a plan I could recommend to the Court, for informational purposes only, I show below the incumbent pairings (as of September 2021) in the Defendants' map. The third pairing shown in the table below, in District 7, is hypothetical but, as defined by the residence of the former incumbent a third pairing would be likely were a tenth individual be given a City Council appointment to the seat that is vacant before the Court ordered a new plan to go into effect in 2022.

Defendants' Map

District	Incumbent (s)	Sequence
1	OPEN SEAT	2022?
2	OPEN SEAT	2024?
3	Sabrina Wooten (2024) / Rocky Holcomb* (2024)	2024
4	Aaron Rouse (2022)	2022
5	Michael Berlucchi (2024)	2024
6	John Moss (2022) / Louis Jones (2022)	2022
7	Guy Tower (2022) / VACANT (2022)	2022
8	Rosemary Wilson (2024)	2024
9	OPEN SEAT	2022?
10	Barbara Henley (2022)	2022

³⁴ Of course, the Court could simply order the 2022 special election cancelled, in which case Mr. Holcomb's term would have expired in 2022 and he would have the option of running in 2024, while Mr. Berlucchi would hold the seat until 2024.

D2 (a). While compactness is a traditional good government criterion, there are (a) multiple measures of compactness (e.g., perimeter-oriented vs. area oriented) which may point in opposite directions,³⁵ and (b) there are no clear standards as to when there is a violation of an explicit (or implicit) requirement of compactness. Moreover, it is obviously inappropriate to simply make compactness the sole standard since compliance with the Voting Rights Act is more important, and there are other factors that come into play when we are looking at legislative or congressional districts, e.g., non-fragmentation of political subunits such as counties or cities.

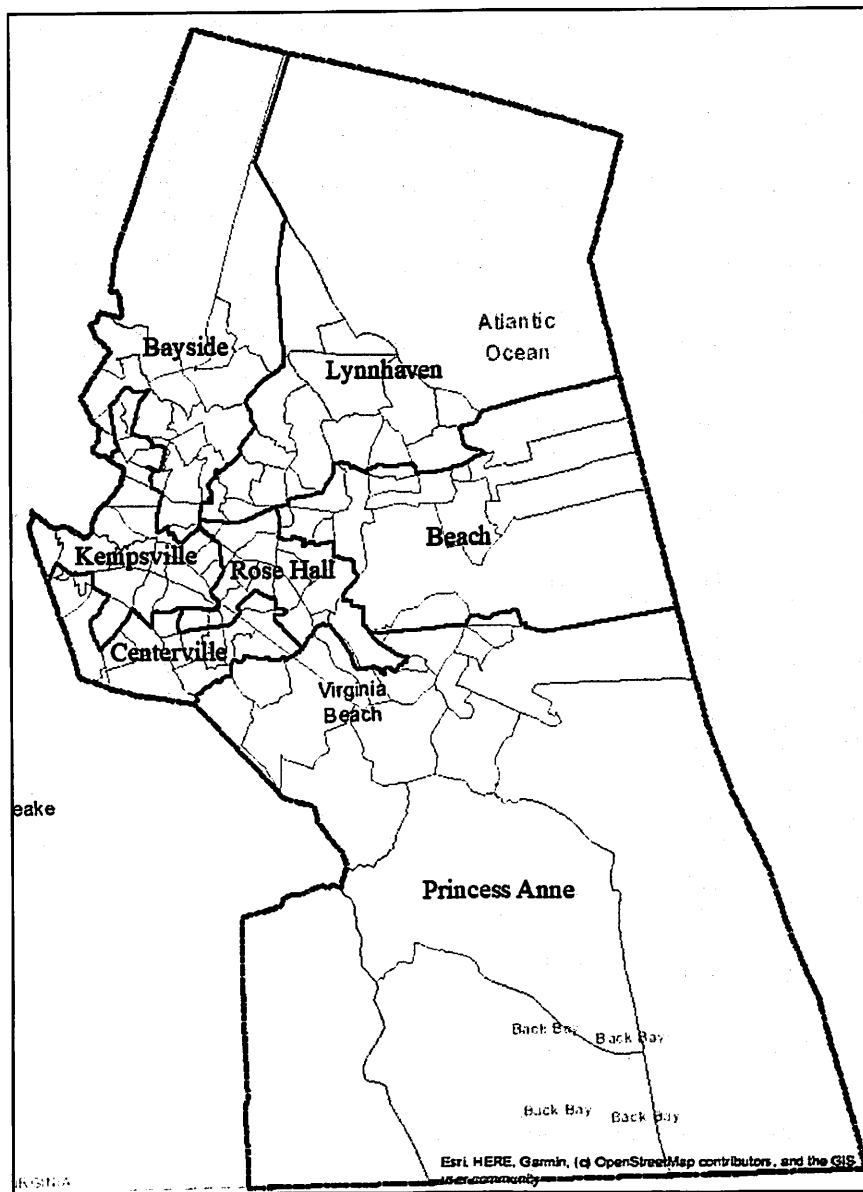
D2(b) My own approach to compactness has been to compare compactness in any remedial map to compactness in the enacted map that has been challenged, either for the map as a whole or the particular set of districts found to be statutory or constitutional violations. I would note that, using the composite compactness score in Dave's Redistricting App, with higher numbers indicating more compactness, the enacted map has a score of 57; the Plaintiffs' map has a score of 56, and the SM map has a score of 62. Thus, I would not see compactness issues as problematic for the Plaintiffs' map, but since it was possible to increase the compactness of my illustrative map over that of the Plaintiffs' map without any negative consequences for voting rights in terms of minority opportunity, I have chosen to do so.

D2(c) For comparison purposes re compactness I show in Figure 2, the current map, Plaintiffs' map, and the SM illustrative map. The VTD shapes are taken from Dave's Redistricting App, but the shapes of the districts are created using census block equivalency assignments.

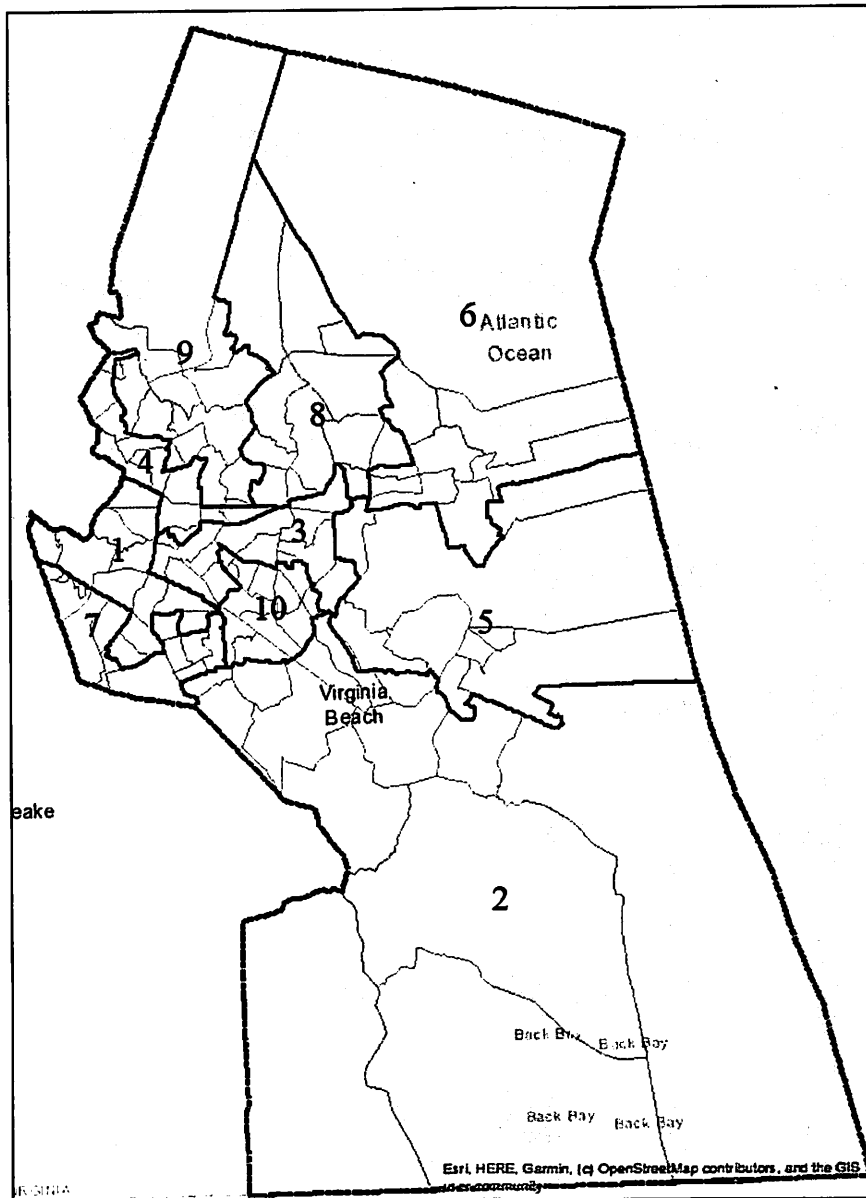
³⁵ See e.g., Niemi, Richard G., Bernard Grofman, Carl Carlucci, and Thomas Hofeller. 1990. Measuring compactness and the role of a compactness standard in a test for partisan and racial gerrymandering. *Journal of Politics*, 52(4):1155-1181.

Figure 2.
Enacted Map (7 District, but with at-large election in each district), Plaintiffs' 10-District Map
and SM 10-District Equipopulous Map

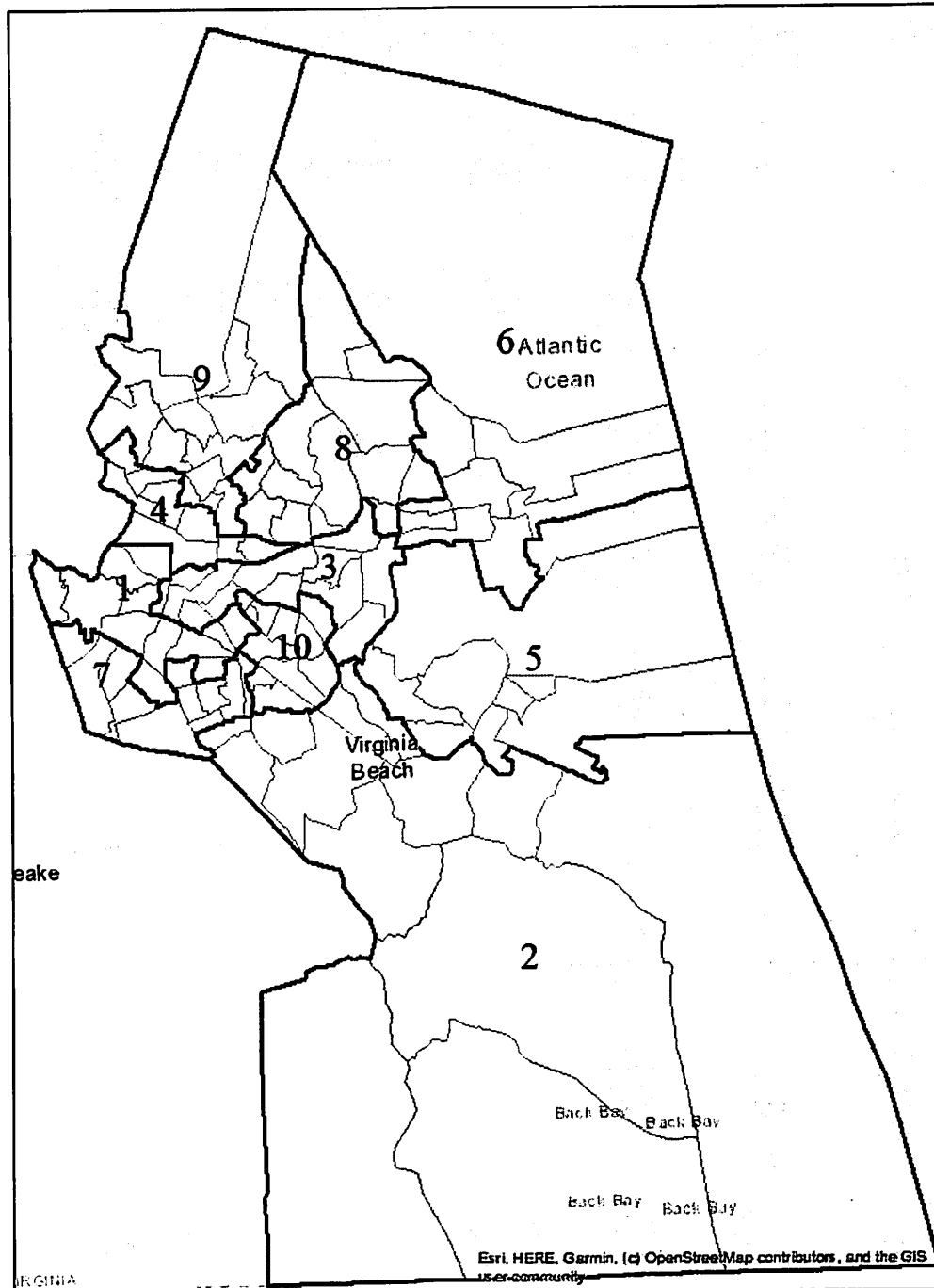
(a) enacted map (only showing the seven single seat districts)



(b) Plaintiffs' map



(c) Special Master equipopulous illustrative map with no incumbent pairings



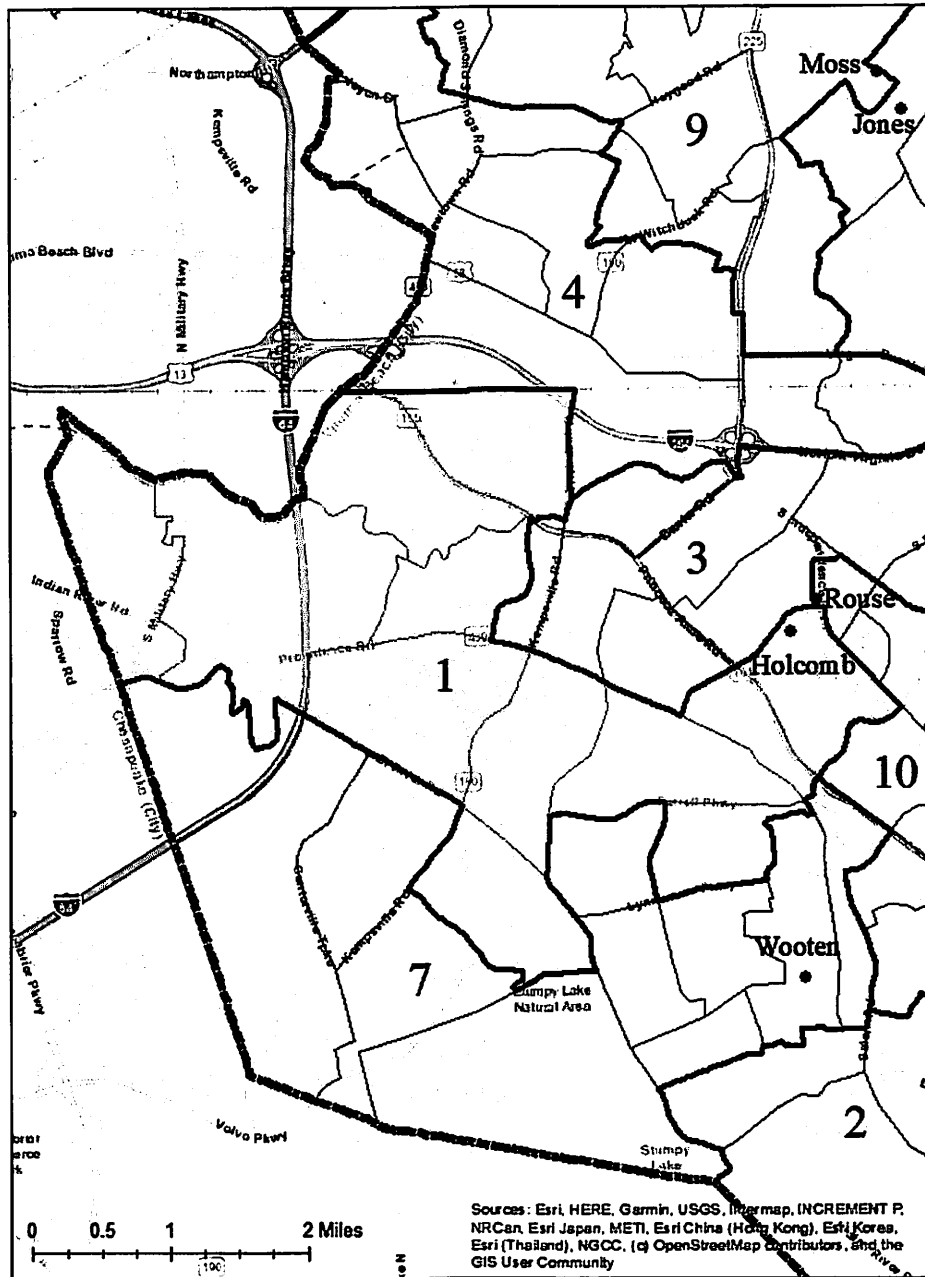
D3. VTDs (precincts) are units of administrative convenience and have no special status. Some VTDs are normally redrawn after any decennial redistricting to better reflect the new district boundaries. The Plaintiffs' map had, according to calculations based on data in Dave's Redistricting App, 14 population-relevant VTD splits and 6 VTD splits involving areas of zero population. The SM map has 10 population-relevant VTD splits. By my visual count, even though only a seven district map, the enacted map had at least two dozen VTD splits.

E. In choosing between the Plaintiffs map and the SM map, there is little difference between the two maps in the features that directly bear on minority opportunity to elect. The differences between the two maps, such as reduced incumbent pairings, improved compactness, and reduced VTD splits in the SM map as compared to the Plaintiffs' map, are simply ones intended to address the special concerns in a court-ordered map that the map be narrowly tailored to fix the constitutional or statutory violations that have been found, while maintaining the necessary features of the map required for it to serve as a full voting rights remedy.

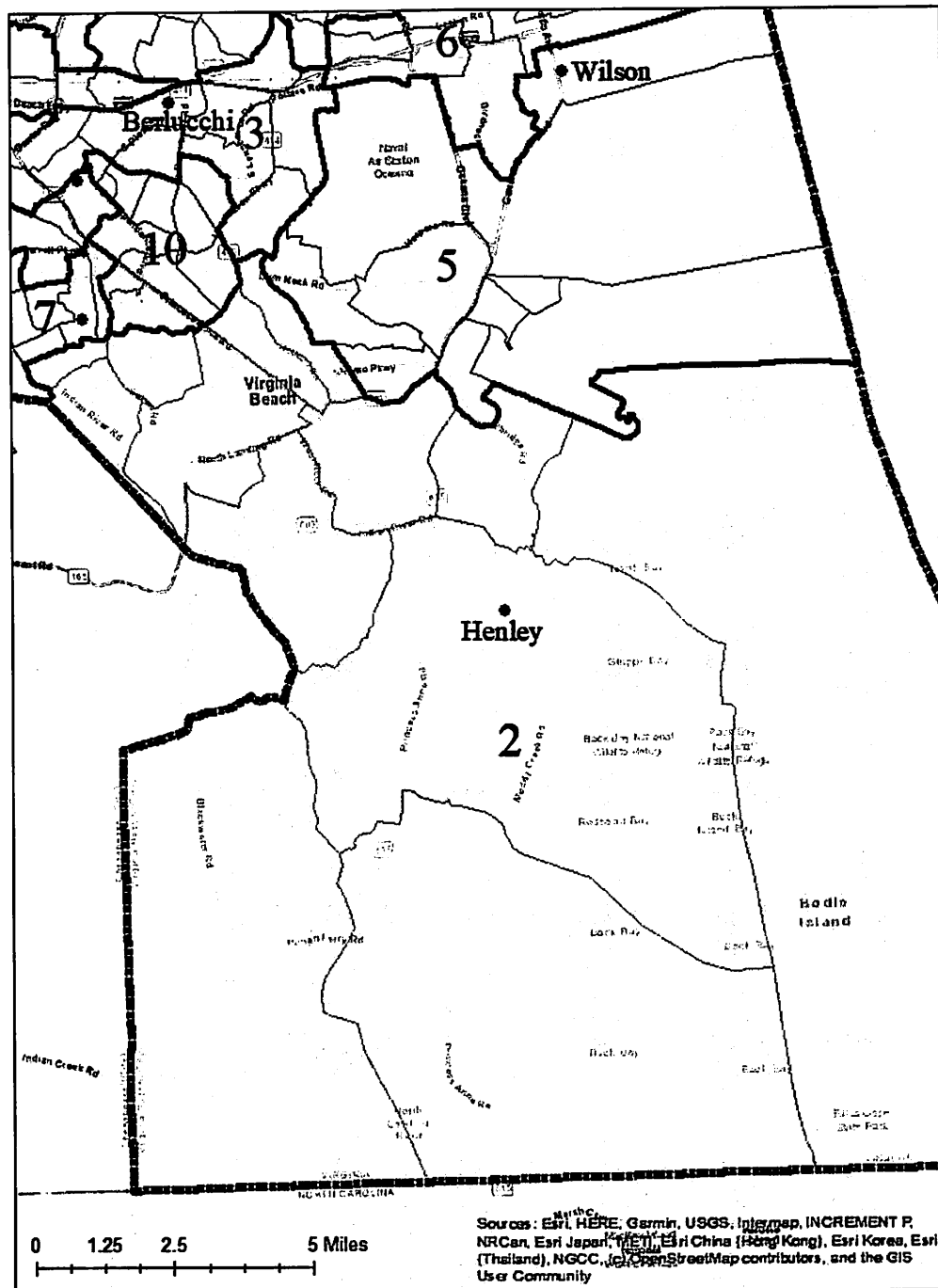
F. Figure 3 (a)-(j) is a slightly larger scale map of each of the ten individual districts in the equipopulous Special Master plan, with the location of incumbents shown.

Figure 3.
Individual Districts in the Special Master Map, with Incumbent Locations Shown

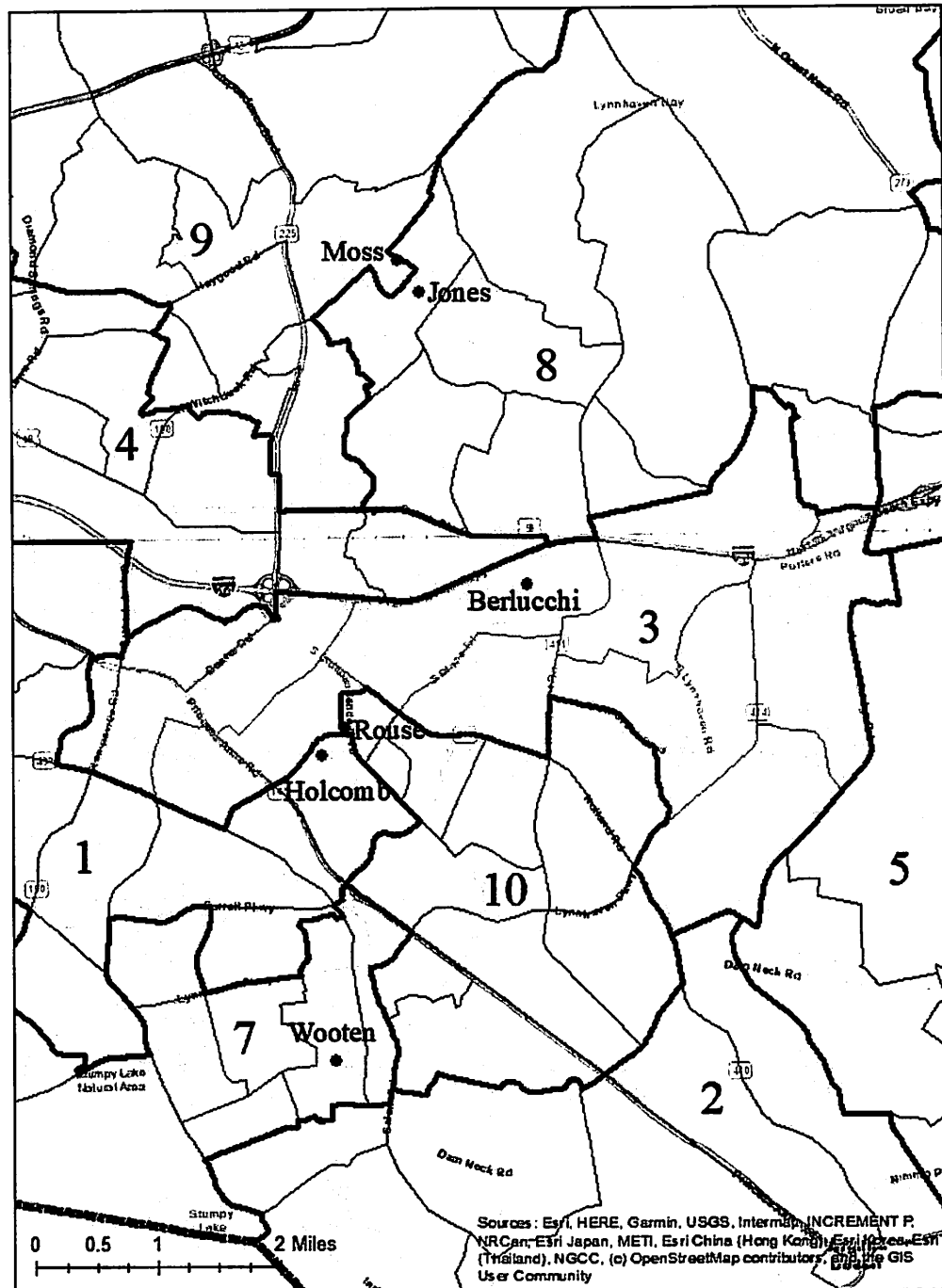
(a) SM District 1 (Holcomb)



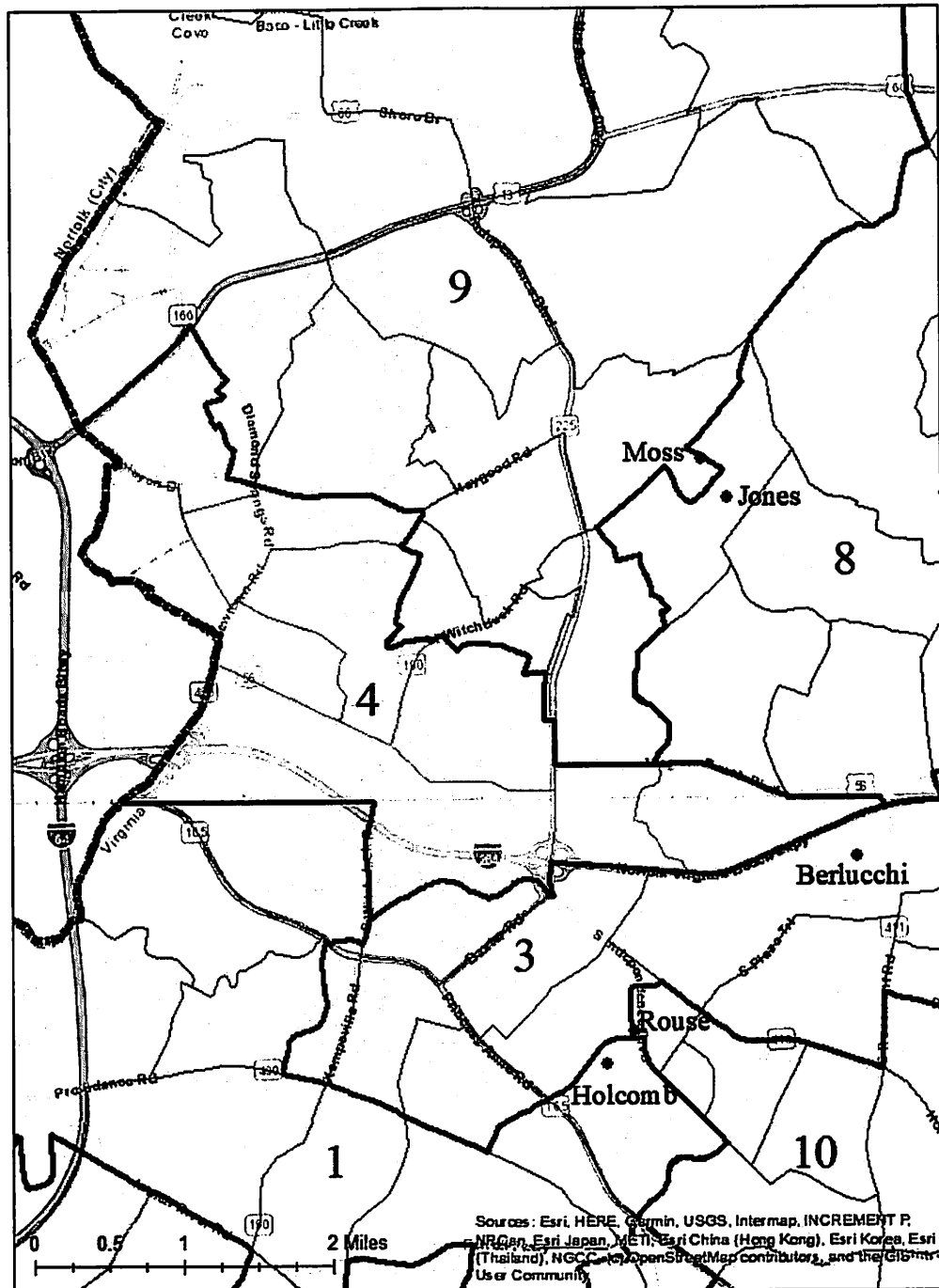
(b) SM District 2 (Henley)



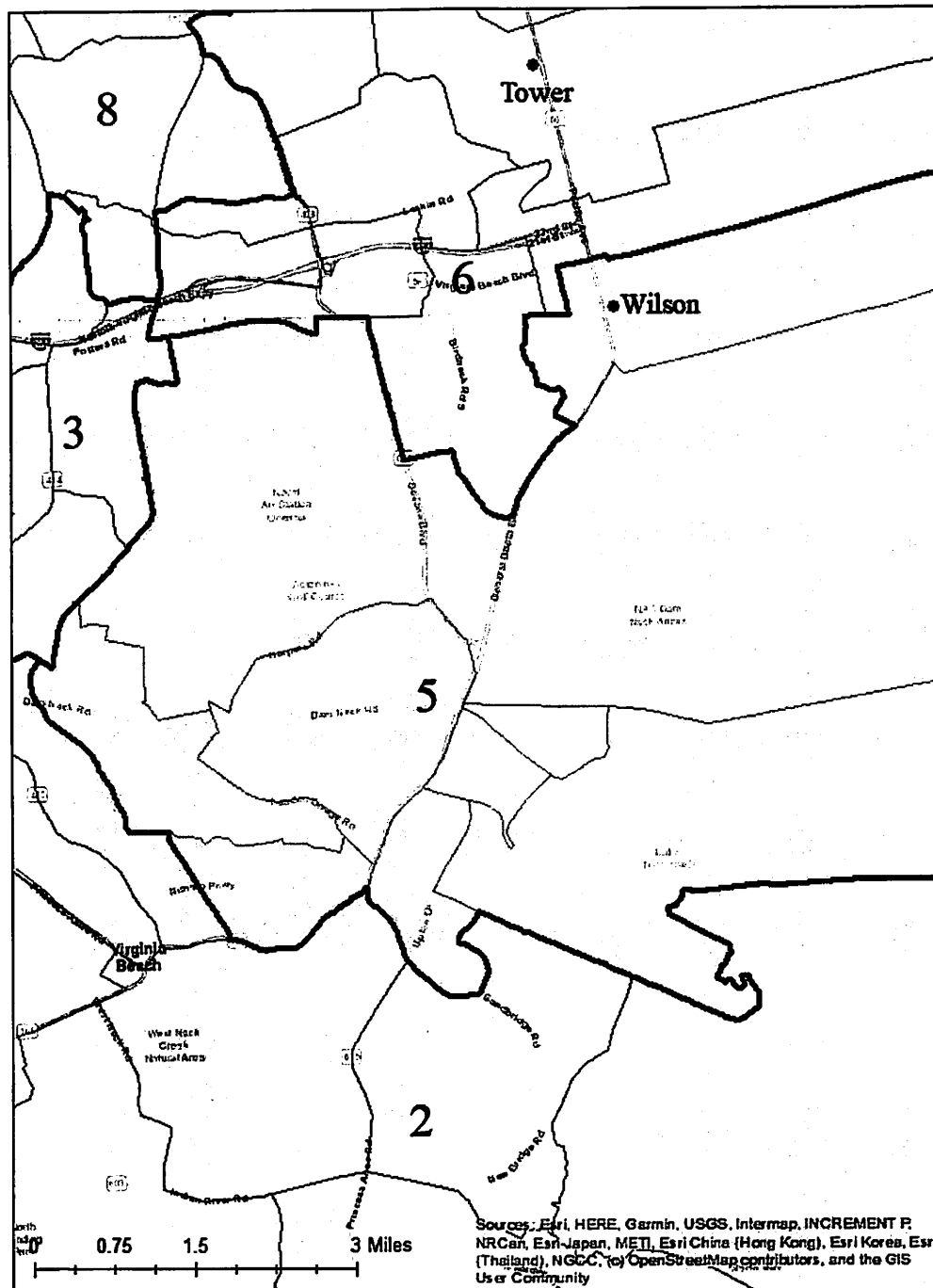
(c) SM District 3 (Berlucchi)



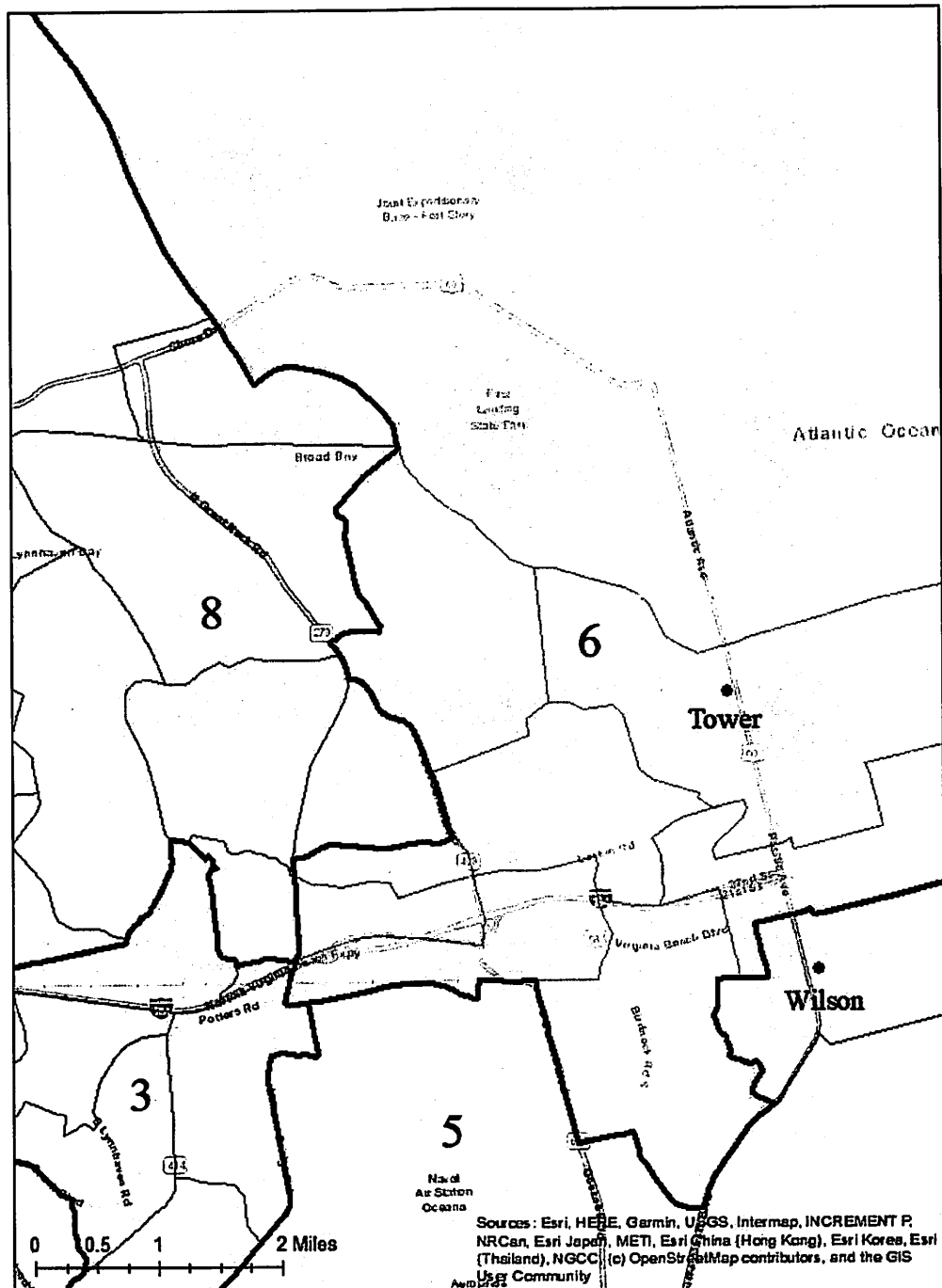
(d) SM District 4 (open seat)



(e) SM District 5 (Wilson)

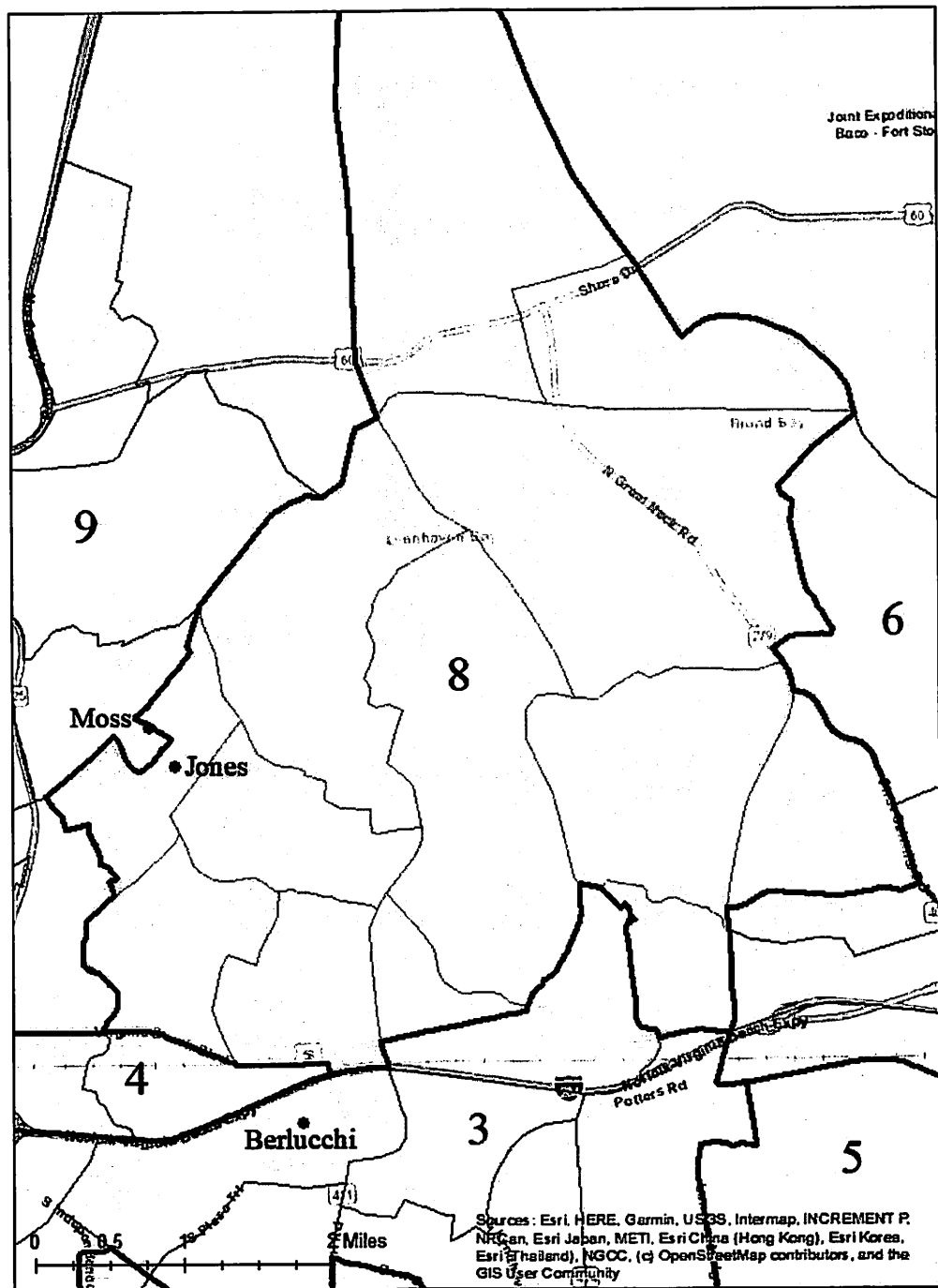


(f) SM District 6 (Tower)

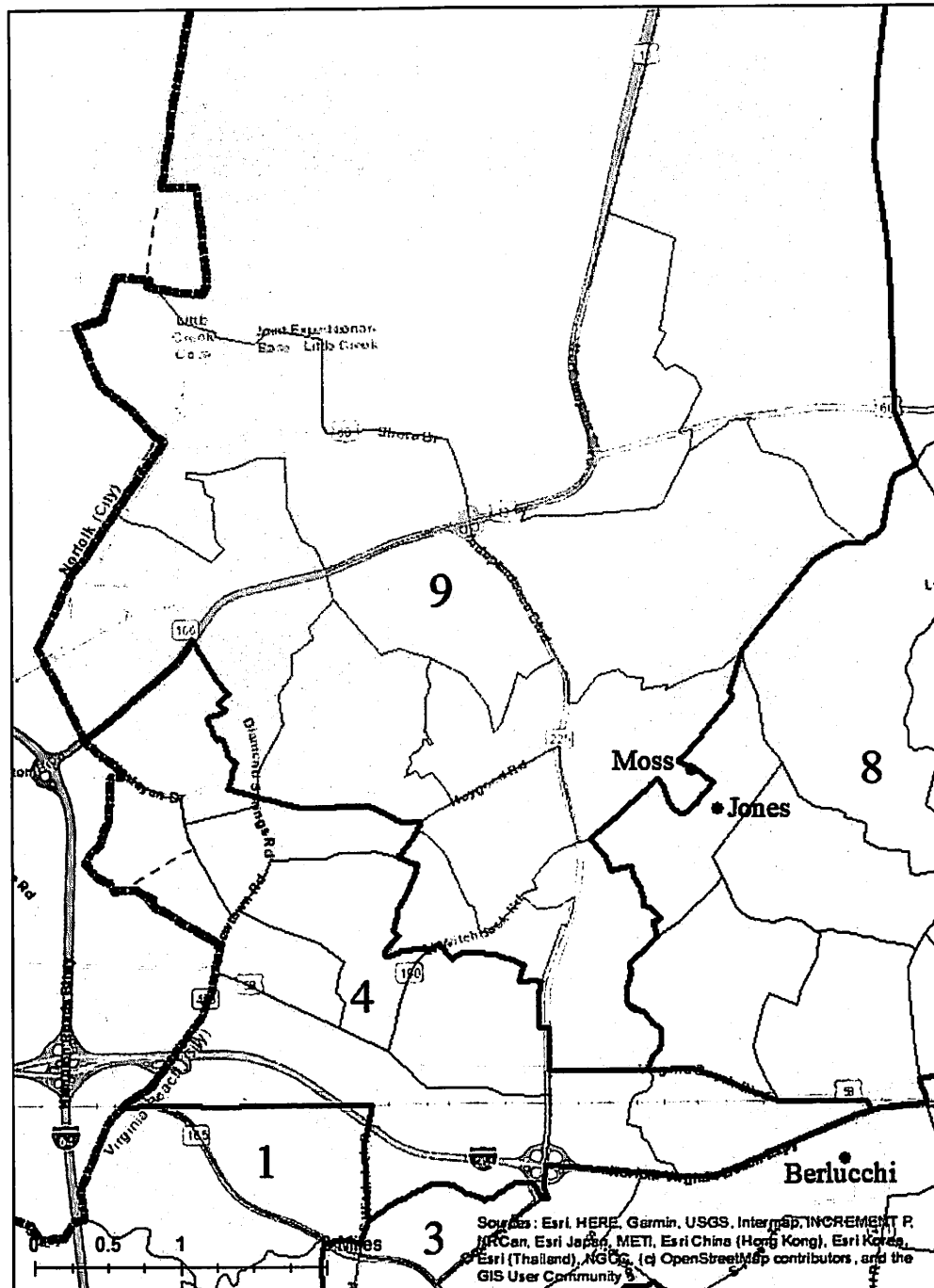


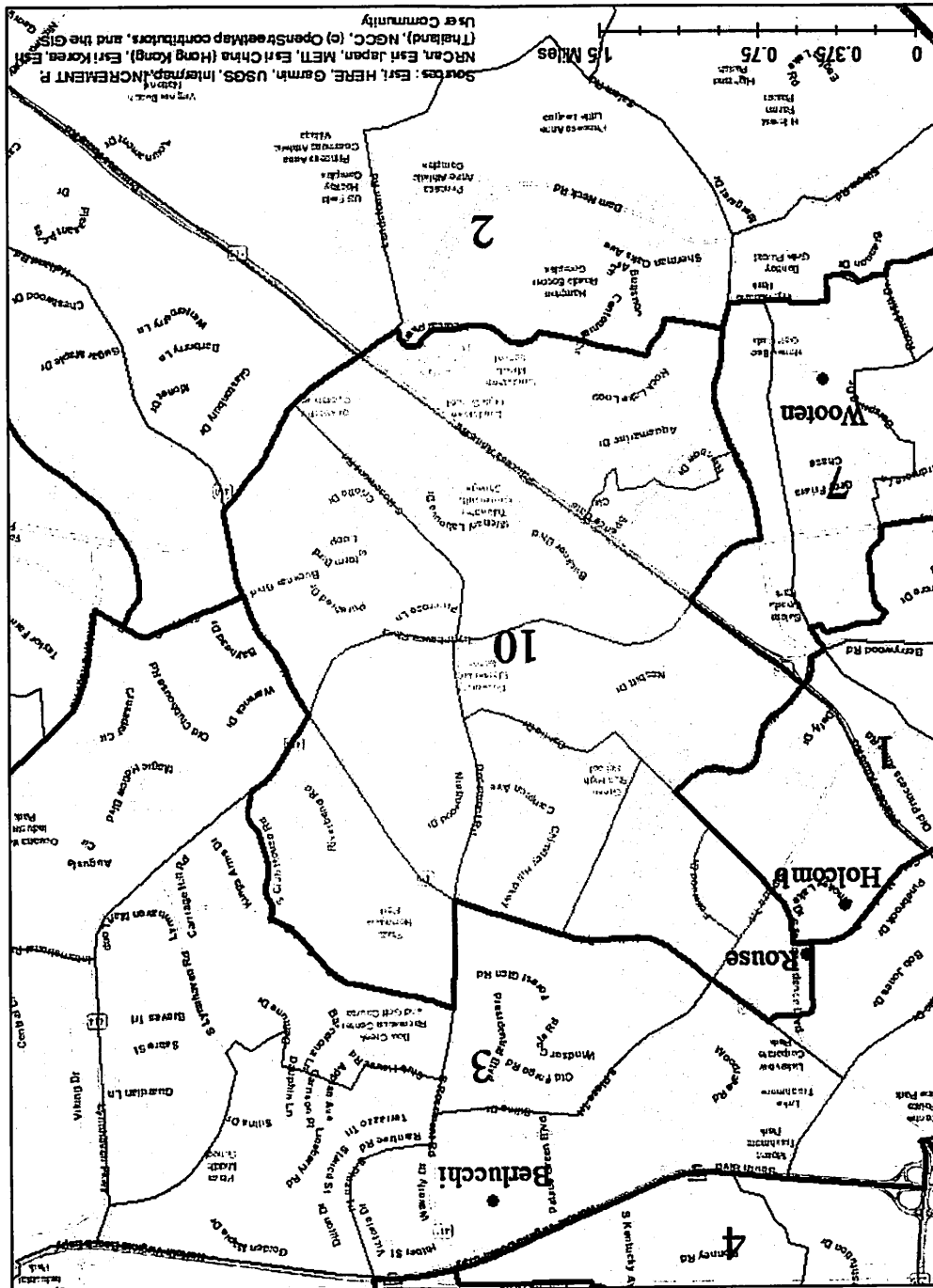
The map displays the Stumpy Lake Natural Area, a large, irregularly shaped region outlined in black. It is situated in the western part of Virginia, near the North Carolina border. The area is divided into several numbered regions: 1, 3, 4, 7, and 10. Major roads shown include Interstate 66 (I-66) running north-south, and Interstate 77 (I-77) running east-west. Other roads include N Military Hwy, S Military Hwy, Chesapeake (CR) Rd, Providence Rd, Summit Valley Pkwy, Komopitche Rd, Volvo Pkwy, Elbow Rd, Indian River Rd, and Virginia Creeper Line. Towns labeled are Rouse, Holcomb, and Wooten. The Stumpy Lake Natural Area is labeled near the bottom center. A scale bar at the bottom left indicates distances from 0 to 2 miles. A north arrow is located at the bottom center. The map is sourced from Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community.

(h) SM District 8 (Jones)



(i) SM District 9 (Moss)





(J) SM District 10 (Rouse)

For African-Americans, Hispanics, and Asian Americans and for the combined minority group, I show in Table 7 the population, voting age population, and citizen voting age populations for each of the ten districts in the Special Master Illustrative Map.³⁶

³⁶ While we expect CVAP percentages to be lower than VAP percentages, and this is almost uniformly true for the data in this table, the CVAP estimates are for a different time period and population shifts can be taking place. Also, the CVAP estimates are based on sampling and thus have a wider confidence bound around them than the census enumeration, and there were important changes in the format of the questions which led to the measurement of the size of the Hispanic population in the 2020 census as compared to earlier censuses or to the way in which data was compiled in the American Community Survey (ACS) pre 2020

X. REMEDY PHASE: Recommendations to the Court.

A. I recommend to the Court that it

1. rejects both maps proposed by Defendants and also rejects the previously proposed Plaintiffs' map.

2. accept my map for use in the City of Virginia Beach and send it for comment to the parties (with a short deadline for responses).³⁸

B. I will be happy to assist the Court in whatever revisions may be needed in the final version of the plan the Court chooses to adopt.

C. I am transmitting to the Court, under separate cover, the block equivalency file and the shape file for the SM illustrative 10-district map.

³⁸ In the event that errors in my Report are detected I will, of course, make the necessary corrections.

APPENDIX A:

Interpreting the Results in Table 2 in “Vote for Two” Elections

A1(a). There are several notes of caution that must be expressed re interpreting the data in Table 2 in the case of “vote for two” elections.

A1(b). One important note of caution about the interpretation of the percentages shown in Table 2 for the “two-seat “contests in 2018 and 2010 is that in multi-seat elections, where voters may cast more than one ballot because more than one winner in the district will be chosen, there can be more than one (plurality or majority) candidate of choice of the group. Thus, care must be taken in assessing the level of racial bloc voting in multi-seat contests. I have been sensitive to this point in my discussion of such contests in the text of this Report.

A1(c) Another important note of caution about the interpretation of the percentages shown in Table 2 for the “two-seat “contests in 2018 and 2010 is that inferences about racially polarized voting, minority political cohesion and usual minority loss need to be adapted to deal with situations where there is more than one minority candidate.³⁸ I have also been sensitive to this point in my discussion of such contests in the text of this Report.

A1(d). What is arguably the most important note of caution about the interpretation of the percentages shown in Table 2 for the “two-seat “contests in 2018 and 2010 is to remind readers that the usual way of reporting percentages for these elections is based on dividing the candidate support by the total number of votes cast, rather than by the total number of voters casting ballots in the election. The actual candidate share of the vote in the election as a whole as a proportion of all votes cast, and the overall ranking of that candidate in the election is correctly stated in Table 2. Similarly, the estimated rank of the candidate among minority voters, and the estimated rank of the candidate among Whites voters shown in Table 2 accurately reflects Dr. Spencer’s findings for the 2018 City Council election (Douglas M. Spencer, “Expert Report: Racially Polarized Voting in Virginia Beach,” July 15, 2019,

³⁸ See discussion of how to assess racial bloc voting in elections with more than one minority candidate in Grofman, Migalski and Noviello (1985), *op cit*. Special care in interpreting results is needed in situations where there is both a multi-seat district and more than one minority candidate. For more on this point see Grofman, Bernard and Michael Migalski. 1988. Estimating the extent of racially polarized voting in multicandidate elections. Sociological Methods and Research, 16(4):427-454, and the erratum to that article in Grofman, Bernard and Matt A. Barreto. 2009. A Reply to Zax’s (2002) Critique of Grofman and Migalski (1988): ‘Double Equation Approaches to Ecological Inference When the Independent Variable is Misspecified.’ Sociological Methods & Research, 37(4): 599-617.

at p. 14). And Table 2 accurately reports Dr. Spencer's 2019 finding with respect to the estimated vote share of the minority candidate from minority and White voters, respectively, in terms of total votes cast. However, although the data in Table 2 is correctly reported, care must be taken in interpreting the percentages shown for the minority candidates in the "vote for two" contest in the table.

B1(a) We can illustrate the problem with data on the 2018 votes for the plurality victory of Mr. Rouse in the two-seat at large election.

B1(b). There were 251,286 ballots cast in this 2018 contest, and we see that Mr. Rouse won 67,089 (27%) and Mr. Moss won 56,835 (23%). Elections & Results :: VBgov.com - City of Virginia Beach The 27% percentage is reported in Table 2 in this Report, based on data in Douglas M. Spencer, "Expert Report: Racially Polarized Voting in Virginia Beach," July 15, 2019, at p. 14). That data, on total votes cast, is taken from the city's website. That percentage is correct as a percentage of all votes cast. But, if we compare the votes cast figure of 251,629 to that in votes cast in city council single seat contests in the same election year, we see that there were under 150,000 actual voters in that election year in other city council elections,

Bayside District- 141,909
Beach District- 145,557
Centerville District- 133,642
Lynnhaven District - 136,357
Princess Anne District - 142,322,

with 158,683 voting in the Mayor's race. So arguably Mr. Rouse has support from somewhere between 46% of the voters (67,089 /145,557) and 50% (67,089 /133,642) not 27%. Even if we compare to the 2018 U.S. Senate contest, with a considerably higher turnout, 169,415 votes cast in Virginia Beach (see [https://www.vbgov.com/government/departments/voter-registrar/Documents/ELECTION%20RESULTS/2018/November 2018/November 2018 Official Results.pdf](https://www.vbgov.com/government/departments/voter-registrar/Documents/ELECTION%20RESULTS/2018/November%202018/November%202018%20Official%20Results.pdf)) we see that Mr. Rouse is winning support from considerably more than 27% of the voters; here this low end estimate³⁹ would be $67,089/169,415 = 40\%$.

B1(c) I could not find on the state website the actual number of voters who cast ballots in the 2018 "vote for two" contest. We cannot simply take our estimate of the total voters in the 2018 "vote for two contest" in 2018 as two times the ratio $(67,089 /251,286) = 53.4\%$ (as Dr. Spencer may have done in a later report of his, "Declaration of Dr. Douglas M. Spencer" July 30, 2021, Table 1 at p. 4.).⁴⁰ The reason for caution is that not all voters in the "vote for two" situation actually cast two votes; some "bullet-voted," i.e., voted for a single candidate. We believe this to be true because the total number of votes cast for all candidates in the 2018 "vote for two

³⁹ In general, political scientists expect what is called *roll-off*, such that lower ticket races do not have as many (fully) filled in ballots as "top-of-the ticket" contests.

⁴⁰ In this 2021 table, the percentage of voters Dr. Spencer reports as having cast votes for Mr. Rouse is 54.5%, with the difference between my calculation and that of Dr. Spencer probably due to his having included votes not cast in person.

contest” is less than 267,284 which is twice the number of votes cast in the single seat election in 2018 in which the fewest votes were cast.

B1(c). But we also cannot simply take the estimate of the votes given above for Mr. Rouse in 2018, namely support from an estimated 40%-54.5% of the voters, and project those results from the two-seat contest into a single-seat contest! Some of those votes are second place votes and such “second” votes will not exist in a “vote for one” contest. But we do not know what proportion of Mr. Rouse’s votes in 2018 came from voters who ranked him second in their ranking and thus used their “second” vote to vote for him, as opposed to voters who ranked him first in their ranking in this multi-seat multi-candidate contest and might still rank him first in a subsequent single-seat election against a White candidate. And this problem of interpretation would still be present even if we did know exactly how many voters cast a ballot in the 2018 “vote for two” contest. Moreover, recall that, when we project votes from biracial/bi-ethnic single seat contests into Mr. Rouse’s District 4 in the Defendant’s map, a district with a higher minority CVAP than the City of Virginia Beach as a whole, in only one election in six is the projected minority candidate victorious in that district.

C. Because of the complexities required to interpret the projection of results in multi-seat contests with multiple minority candidates into single-seat contests, I will not make use of information from such two-seat contests when I identify *minority opportunity* districts in proposed remedy plans, though I do make use of data from them in assessing racial polarized patterns of voting in these elections, and minority and White political cohesion in these elections.

D. For example, despite the problems of projecting “vote for two” contest results into single seats, we can readily look at the election results in such elections to examine features such as racial polarization. In particular, combining the data for the 2010 and 2018 “vote for two” contests, each with two minority candidates, taken from Dr. Spencer’s estimates of vote shares from minority and non-minority voters (reported by me in Table 4 of this Report), we can immediately see that the minority is far more supportive of minority candidates than is the case for White voters, with minority voters ranking the minority candidates, on average, in 2nd place, while White voters, on average, ranked the minority candidates in 5th place. Note that these rankings are levels of relative support and thus do not depend upon having the exact vote percentages.

APPENDIX B:

Estimability of racially polarized voting (RPV) patterns for *individual* minorities viewed separately from one another

A1(a). While there are statistical methods that have been developed to allow for analysis of racial voting patterns in situations where there are multiple groups whose voting behavior is to be assessed, I share the initially expressed view of both the Plaintiffs' expert (Dr. Spencer) and the Defendants' experts (Mr. Brace) that, given the specific case facts in Holloway vis-à-vis the racial demography and geography of the City of Virginia Beach, despite the sophistication of recent work on statistical models to estimate RPV, separating out the voting behavior of each individual group in the composite minority grouping is, for all practical purposes, impossible. I would note, however, that my support of this conclusion is intended to apply only for the very specific case demographic and geographic facts in the City of Virginia Beach, namely the small populations for some minority groups and the geographic commingling of the three minority groups reported in the text of the Report and attested to by experts for both sides.

A1(b). There can be no dispute that the minority populations of African-Americans, Hispanics, or Asian-Americans are very highly intertwined geographically at the level of VTDs, and that the latter two groups are quite small in size. Experts for both sides (Mr. Brace and Dr. Spencer) are in agreement that, in the absence of reliable survey data on the voting behavior of members of the three groups in city council elections or some elections that are directly comparable – data which is simply not available in this case – separating out the voting behavior of each individual group in the composite minority grouping is virtually impossible using standard methods of ecological inference. Dr. Spencer says “the population of Hispanic and Asian voters is not large enough to generate precise estimates of candidate preferences using traditional statistical methods. (Report of Dr. Spencer, August 26, 2019, at p.6). Similarly, Mr. Kimball Brace, an expert for Defendants, is mentioned on p. 13 of the Court Opinion as having expressed the view that “statistical estimation techniques could not provide information on Asian and Hispanic voting patterns because these groups are small and dispersed throughout the City.”

B. In the process of reaching conclusions about the degree of polarization between and cohesion of the minority community as a whole, experts for both sides offer some (sometimes parenthetical) comments in which they state inferences/beliefs about differences in the voting behavior of African-Americans, Hispanics, and Asian-Americans. I do not regard any inferences about how the three minority groups voted as individual groups, whether made by an expert for Plaintiffs or an expert for Defendants, to be sufficiently well supported for me to make any use of them in my own analyses.⁴¹ I regard it as essentially

⁴¹ Various experts made assumptions that seemed to allow them to derive intuitions about the voting behavior of each of the separate minority groups, but the inferences are flawed. For example, experts for both sides in this case provided comparisons of ecological regression-based or ecological inference-based estimates of voting patterns in the Black community and voting patterns in the combined minority community. However, there are problems in drawing reliable

mathematically impossible, given the data limitations in this case, to reliably estimate voting behavior for each group separately.

C1. The fact that, given the particular demographic geography of the City of Virginia Beach, it may be impossible to separate out the voting behavior of each individual group in the composite minority grouping does not, in any way, foreclose correctly identifying the voting behavior of the composite minority group as a whole, nor does it foreclose reliable identification of the level of racially polarized voting of the combined minority community vis-à-vis the majority White and non-Hispanic bloc of voters. And, as shown in the body of this report, there is clear and compelling evidence for racially polarized voting in Virginia Beach City Council elections between White (non-Hispanic) and non-White voters and for political cohesion on the part of both the minority group and White voters in support for or opposition to minority candidates.

conclusions from such comparisons. In common sense terms, we are trying to estimate minority votes for the minority candidate divided by minority (eligible) population. But if we are trying to compare, say, Black votes for the minority candidate divided by Black (eligible) pop with minority votes for the minority candidate divided by minority (eligible) population then we are comparing two numbers the differences between which are found primarily in the denominator. In particular, we expect that the denominator for the second ratio is higher than the denominator for the first ratio, since minorities other than Blacks are giving some (perhaps even equal) support to the minority candidate; but if we are dealing with a fixed geographic area, the numerator will be the same numerator in the two ratios. In other words, when we use Black as the racial group, some of the votes we attribute to Black voters will be coming from non-Black voters who are members of other minority groups. Thus, purely as a statistical artifact, we expect our estimates of the Black population voting for minority candidates to be higher than our estimates of the minority population voting for minority candidates even if Black voters, Hispanic voters, and Asian-American voters are equally likely to support minority candidates. In principle, there are statistical tools to take this confounding into account but, in my view, that high level of geographic commingling of the three minority groups and the absence of truly homogeneous precincts for any of the three minority groups (or even for the minority group as a whole), vitiates the applicability of such methods. A similar problem arise if we seek to estimate the voting behavior of the combined minority community by first assessing the voting behavior of the majority white/Anglo group in an election, for whom we do have homogenous precincts and good ecological inference estimates, and then use simple high school algebra to calculate the vote of minority voters as an unknown in an equation where the known values are the proportions of non-minority and combined minority voters in the district, and also known is the share of the vote in the district that went to the minority candidate (or candidates) of choice, and also known is a reliable estimate of White voting behavior. This method can work to estimate the voting behavior of the combined minority group, since this group is, for all practical purposes, the complement of the White group. But this method of triangulation is not possible when we are trying to separately estimate the behavior of four groups, rather than just two groups. The problem is analogous to the problem, pointed out by teachers in algebra classes, of having more unknowns than you have equations from which to estimate the values of these unknowns.

Bernard Grofman

A handwritten signature in cursive script, appearing to read "Bernard Grofman".

September 26, 2021

APPENDIX C**Zachary R. Griggy**

11 Balboa Ct, Novato, CA 94949

(415)-940-5384

zgriggy@uci.edu**MAPPING CONSULTANT****Summary:**

I am a UC Irvine political science and urban studies undergraduate. I have made use of my computer skills and my knowledge of Geographic Information Systems (GIS) to prepare redistricting maps in local (school board, city, and county) redistricting in my home county of Marin, California.

Redistricting plans I drew that have been implemented in subsequent elections

- 2019 - San Rafael City Schools Board of Education (Marin County, California; used in 2020)
- 2019 - Novato Unified School District Board of Education (Marin County, California; used in 2020)

Current Involvement with Redistricting

- 2021- Member, Marin County Ad Hoc Redistricting Commission
- 2021- Mapping consultant, Task Force on redistricting in the City of Irvine, Associated Student Government University of California, Irvine
- 2021- Using 2020 Census Data, acting as a private citizen, I prepared draft district plans for Marin County local units of government and met with elected officials and community leaders to discuss districts that best represent communities of interest
 - Novato City Council
 - Novato Unified School District Board of Education
 - North Marin Water District Board of Directors

Other Public Service Involvement

- 2020-2021 - Legislative Affairs Staffer, Associated Students of UC Irvine,
 - Planned town halls with community leaders including U.S. Rep. Katie Porter and debates featuring candidates for Irvine Mayor and City Council
 - Tracked and analyzed bills proposed in the California State Legislature

GIS and Computer Skills:

- GIS
 - Dave's Redistricting App
 - Esri Redistricting Online
 - ArcGIS Districting Extension
- EXCEL, PowerPoint, WORD

Education:

- University of California, Irvine, 2019-Present. 3.978 GPA
- San Marin High School, 2015-2019. 4.2 weighted GPA

Honors and Educational Awards:

- Pi Sigma Alpha Honor Society
- Dean's Honor List, University of California, Irvine, 2019, 2020, 2021